



AgVantage Green Notes



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Is it too late to apply nitrogen to Winter Wheat?

By Jim Camberato and Chuck Mansfield, Purdue University. - It is not too late to top-dress wheat with nitrogen. Although it is best to have nitrogen (N) applied prior to jointing, wheat can respond to N applied through emergence of the flag leaf. However, as the season progresses, more physical damage is done by ground equipment. Also, less yield response is obtained and increased grain protein is observed with later N applications.

Top-dress N rate should be adjusted down 10-15 % for wheat that is already jointed Feekes GS6 (As of the end of last week much of the southern part of Ceres Solutions was just beginning to joint or had not yet jointed.—Betsy Bower). As wheat continues to progress through Feekes GS7 to GS9 (second node -flag leaf fully emerged), the response to applied N is likewise reduced and further reductions in N rates should be made. No benefit to applied N fertilizer will be realized after the flag leaf is fully emerged. For the rest of the state, wheat is either beginning to joint or (for northern Indiana) is still at Feekes GS 4 to GS 5 where one would expect it to benefit from the full rate of N.

Which N source should I use? - There are pluses

and minuses to all fertilizer sources especially as the season progresses. When applying liquid N, use streamer bars or drop nozzles, not flat fans, to minimize contact with the leaf tissue. You can also reduce the burn potential by diluting the liquid N half and half with water. Of the solid N sources, urea will burn less than ammonium nitrate or ammonium sulfate.

Surface-applied liquid urea-ammonium nitrate (UAN) and urea always have the potential to lose N to the air by ammonia volatilization, but the potential is higher now with warm temperatures than earlier in the year when it was cold. Under worst case conditions, 15 to 30% of the N may be lost from UAN and urea. Adding a urease inhibitor to UAN and urea may be warranted to reduce ammonia loss.

Wheat should be scouted before spring weed control is applied. Aphids, powdery mildew and septoria leaf and glume blotch have been observed in the south. Both insecticides and fungicides can be mixed with Harmony Extra. It is too late in the south to apply 2,4-D or Banvel to wheat. Harmony Extra can be applied until flag leaf emergence (now through Feekes GS 8.)

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Alfalfa should be scouted south of I-70 now for alfalfa weevil.	
Scouting for weevil N of I-70 should also start now and checked regularly over the next 7-	

Corn Planting Date is Important But....

By Bob Nielsen, Purdue University—Very little corn, if any, has been planted in Indiana to date. By itself, this is not much cause for concern, however, little other spring fieldwork has been completed due to rainfall in recent weeks. For many growers, tillage operations, herbicide applications, and nitrogen fertilizer applications must be completed first before they can consider planting their crops.

What are the consequences of a delayed start to planting? How important a predictor of statewide corn yield is planting date anyway? Does late planting in and of itself guarantee lower than normal yields? Interestingly, the planting date effect on statewide average corn yield is not clear-cut.

If one reviews USDA-NASS crop progress reports for the past 17 years there is NOT a strong relationship between planting date and yield on a statewide basis. Specifically, departures from annual trend yield are not strongly related to corn planting progress. In other words, a number of yield influencing factors (YIFs) other than planting date affect the ultimate maximum yield for a given year.

So what's the deal? Why is it that every corn agronomist known to

man preaches about the importance of timely planting and yet the statewide statistical data suggest that planting date accounts for only 24% of the variability in statewide yields from year to year? Let's think more closely about this seeming paradox.

It is true that corn grain yield potential does indeed decline with delayed planting after about May 1 ([Nafziger, 2008](#)). The yield loss per day varies from about 1 bu/ac/day early in May to nearly 2 bu/ac/day by the end of May. Yield potential decreases with delayed planting because of a number of factors, including a shorter growing season, insect & disease pressure, and moisture stress during pollination.

However, the good news is that planting date is but one of many YIFs for corn. What is important to understand is that yield loss to delayed planting is relative to the maximum yield possible in a given year. In other words, if all the other YIFs work together to determine that the maximum possible yield this year is 200 bu/ac, then the consequence of a 10-day planting delay beyond May 1 (at 1 bu/ac/day) would be a yield potential of 190 bu/ac (i.e., 200 bu/ac potential minus 10 bu/ac due to delayed planting). However, if all the other YIFs work together to determine that the maximum possible yield (cont. on page 4)

No-till Corner—Starting Clean in No-till

By Bob Hartzler—Iowa State University—As more Iowa fields develop a history of no-till production, infestations of winter annual weeds are on the increase. The first step in managing winter annuals is proper identification of the species infesting the field.

After the weeds have been identified, appropriate treatments and application timing can be selected. Applications in early to mid-April often have advantages compared to treatments made at planting.

First, winter annuals will be in a vegetative stage of growth and frequently are much easier to kill than when they reach the reproductive stage. Secondly, research has shown that killing existing vegetation at least 10 days prior to planting minimizes the risk of negative effects on crop growth and yield. Finally, combining 2,4-D with glyphosate or other products improves the consistency of control on many common winter annuals and dandelion. Early spring applications avoid conflicts with the planting delays specified on the 2,4-D label for both corn and soybean, therefore minimizing risks of adverse crop responses.

The particular herbicide treatment used for controlling winter annuals is dictated by the weeds present and objectives of the treatment. Due to high frequency of glyphosate resistant horseweed (marestalk) across the Midwest, applications of glyphosate alone are not recommended for fields infested with this weed. Including 2,4-D LVE will improve control of horseweed.

The use of preemergence (PRE) herbicides in glyphosate resistant (GR) crops is likely to increase due to the increased cost of glyphosate. Most PRE products can be applied early with burndown herbicides, but early applications will reduce their length of residual control. Reduced rates of PRE herbicides are popular with GR crops since the PRE herbicides are not expected to provide full season weed control. Too large of a reduction in the PRE rate combined with an application several weeks ahead of planting may result in failure to suppress weeds long enough to allow a single, in-season application of glyphosate to provide full season control and protect crop yields.

Ways to Maximize Yield Potential—Achieving a Uniform Corn Stand

From “Growing Knowledge” a publication of Monsanto. Sourced from Bob Nielsen, Purdue University. - Before, during and after planting, many factors contribute to corn stand uniformity. Managing the factors we can control can help maximize yield potential.

Emergence Requirements—Germination requires 65-80 growing degree units (GDUs), adequate moisture and soil temperature of 50 F or warmer. Emergence requires 100-120 GDUs, or approximately four to five days after planting, however, cool, dry conditions may delay emergence two weeks or more.

The coleoptile needs to successfully emerge through the soil surface without leafing out below ground. The coleoptile normally ruptures when exposed to sunlight at the soil surface. Field preparation resulting in cloddy soil, herbicide injury, crusting, or extremely cold soils could cause it to rupture below ground.

Factors for Uniform Stands: Planter Maintenance—Proper planter maintenance and calibration is critical for even spacing and depth.

Planting Depth—Consistent planting depth is important for uniform stands. Early in the planting season, plant 1.5-1.75 inches deep. Later in the season, planting depth may need to be deeper to reach moisture, however, do not exceed 2.5 inches.

Soil Crusting—It is tempting to work fields to dry out the soil to hasten planting. Often, the ground might be dry enough to work the top 2-3 inches, but remains wet below. Working it at this stage can result in a compaction layer 2-3 inches into the soil profile. It can also result in those top few inches being worked into a fine powder that turns into a crust with a hard rain. It is better to wait for the soil to dry normally.

Wet Soils—Working wet soils can result in cloddy soil conditions. Planting into clods can cause the coleoptile to rupture prematurely and leaf out below ground, resulting in stand reductions and uneven emergence.

Planting into wet soils can result in sidewall compaction and/or seed furrows. Sidewall compaction can inhibit good seed to soil contact. Without that good seed to soil contact, the process of imbibing water to begin germination is slowed or stopped completely, leading to uneven emergence. Open seed furrows also reduce good seed to soil contact, but can also lead to plant death and increased risk for herbicide injury. Waiting for soils to be fit before working or planting can help optimize seed to soil contact, minimize compaction and reduce risk from herbicide injury, all of which contribute to more uniform corn stands.

Herbicide Applications - Many preemergence herbicides are shoot inhibitors. With proper sprayer calibration and use rates, the risk of injury, primarily identified as leaf out below ground or buggy-whipping is minimal. However, overlaps, cold temps, open seed furrows, or 2,4-D as a tankmix partner can increase the risk of injury.

Yield Impact—A difference of two leaves or greater between adjacent plants will generally result in the smaller plant being barren. Emergence delays of around 10 days, scattered through the field, translate to growth stage differences of two leaves or more and may result in yield losses up to 9%. Delays of about 21 days, scattered through the field can result in yield losses up to 22%.

Be mindful to take actions to help make your corn stand as uniform as possible to maximize your yield potential.

Best Control Practices for Burcucumber

By Dawn Refsell—Burcucumber is a particularly troublesome weed in corn and soybeans for the following three reasons: it has a discontinuous emergence pattern with plants emerging late into the growing season when there are few effective herbicides, it is very competitive and its vining growth interferes with harvest.

Burcucumber management requires an integrated of preventative, mechanical and chemical programs. **Preventative:** avoid running a combine or tillage equipment through infested areas.

Mechanical: - mowing pastures and roadsides where burcucumber is found. Tillage—to till or not to till has produced mixed results.

Chemical - Corn—Atrazine at the full use rate has been the primary

recommendation. Any of the standard atrazine premixes along with products such as Balance Pro, Epic, and Callisto at full labeled rates provide a good foundation. Even with these combinations you will probably still need to follow with a post emergence application at the latest possible timing. Post options include Beacon, Northstar, Exceed/ Spirit, Callisto, glyphosate and Liberty. Be sure to read and follow all label directions.

Soybeans—Effective preemergence herbicides include Canopy, Scepter and Pursuit. Post emergence options include Extreme, Classic, Synchrony XP, Flexstar, Cobra, Ultra Blazer and glyphosate. A additional harvest aid treatment of glyphosate may still be necessary which is black layer in corn and brown pod in beans

Not the Year to Mud-in Soybeans

By Jim Beuerlein and Anne Dorrance, Ohio State University—In 2007 many soybean seed production fields were harvested when the seed was very dry resulting in mechanical damage to the seed. In spite of record yields the harvest damage has resulted in a severe shortage of high quality seed. Many seed lots have germination rates lower than normal along with reduced vigor and quality. Because the seed is so fragile, any handling further reduces germination and quality, leading seed companies to question whether or not to apply fungicides to the seed.

Most seed lots have been evaluated using two tests. One is the standard warm germination test that tells us the percentage of seeds that are alive and that will germinate under ideal field conditions. That percent is printed on the seed tag. The second test is the Cold Test that evaluates the seed vigor under extremely stressful conditions and these results are only available from your seed dealer. For this test, seeds are planted in a mixture of soil and sand, watered and placed in a cold chamber at 50 degrees for seven days before being moved to a 77 degree germination chamber for four days. The exposure to cold wet conditions with disease organisms present allows only the most vigorous seeds to survive and be disease free. This test is often conducted on the seed with and without a fungicide seed treatment to evaluate the benefit of seed treatment. A cold test result of 70 percent or greater indicates the seed is highly vigorous and will provide good emergence under severe field conditions.

Seed with reduced vigor is much more susceptible to seedling damping-off caused by *Pythium* spp. as well as *Phytophthora*. As the seed imbibes water it begins to swell, with the thin seed coats, this cracks and leaks plant exudates. These exudates get the pathogens

“excited” and they can find the seed that much faster. Fungicide seed treatments will protect this type of seed. Especially if it is planted into fields that have a long history of stand establishment issues.

The seed we will plant in 2008 can be characterized as having:

- 1) High warm germination percent (90+percent) and high seed vigor (70+percent),
- 2) Seed with a high warm germination percent (90+percent) and a medium vigor test (60-69 percent), and
- 3) Seed with a medium warm germination (85-89 percent) and a medium vigor test (60-69percent).

Our suggestions for managing your seed supply are:

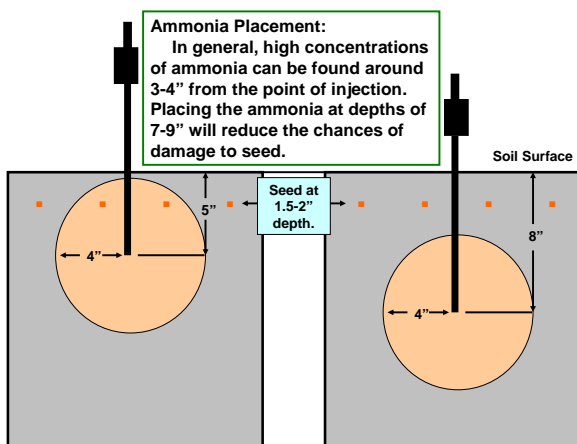
- 1) All your seed should be treated with fungicides for protection from root rot diseases. Treating may reduce the germination a bit but should increase final stands and root system health.
- 2) Work with your seed dealer to classify the seed you will plant into one of the three categories above.
- 3) Plant the highest quality seed first and in the most adverse environments. You may want to reduce the seeding rate 10-15 percent to extend this seed over more acres.
- 4) Plant the lowest quality seed in fields with excellent soil drainage, good soil tilth, and when the soil is warm and moist.
- 5) Handle the seed as gently as possible and the least amount possible.
- 6) Slow the planter down so that each seed is planted 1 inch to 1.5 inch deep and spaced uniformly in the row. If you must reduce seeding rates, it is much better to have low populations in narrow rows than wide rows.

Issues Regarding Nitrogen Applications

Appropriate Interval for Planting Corn Following Ammonia Application—George Watters, Winfield Solutions—As fields begin to dry, there will be a lot of pressure to get anhydrous ammonia applications and planting started as soon as possible. The most important consideration in how soon one can plant corn following ammonia application is having sufficient soil separation between the ammonia injection zone and the seed. Injection depth of the ammonia is very important.

this ammonia zone, seedling damage can occur.

The greater the time interval between corn planting and ammonia application, the less corn roots will be affected. There is no set time to wait in order to eliminate potential problems if seeds are placed in or near the ammonia zone. As a general “rule of thumb”, it is often recommended to wait a period of seven days following ammonia application before planting corn. However, with adequate soil moisture, deep placement, proper sealing, and good lateral offset or application of ammonia at an angle to the corn rows, corn can often be planted without injury within a day or two. These practices would help insure sufficient amounts of untreated soil between the ammonia band and the germinating seed. Under adverse conditions such as dry soils, cloddy soils, shallow placement, high rates, etc., injury has been observed even when ammonia was applied up to 3 weeks prior to planting.



Ammonia will generally diffuse 3 to 4 inches from the point of injection in most soils. If the injection knife smears the sides of the injection slot due to wet soil conditions, outward ammonia diffusion will be limited, resulting in potential increased upward movement. In the event of shallow placement or upward movement, and you place seed in

How much nitrogen have I lost? - Fabian G. Fernandez, University of IL— Although it has been a wet winter, soil temps have been cold. Since soils are still cool and wet, and nitrifying bacteria need warm temps and aerobic conditions to transform ammonium to nitrate, it is likely that not much fertilizer N has been transformed into nitrate or soil N mineralized at this point. If the spring stays wet during April and May as soil temperatures start to climb, it is likely that some of the fertilizer N will be lost.

The greatest reason for concern about N losses at this time, or for any given year would be for fall N applications in which guidelines were not followed. If fall N was applied to soils warmer than 50 F at a 4" depth, to sandy or poorly drained soils, and fall nitrogen was not protected with N –serve, there is a greater chance for N loss in these situations.

Grain Update

USDA Summary—July 12, 2007

Estimates in Million Bushels

Corn	Apr USDA—07/08	Mar USDA—07/08
Carry-in	1304	1304
Production	13,074	13,074
Total Supply	14,393	14,393
Feed and Residual	6150	5,950
Ethanol	3,100	3,200
Exports	2,500	2,450
Total Use	13,110-	12,955
Carry-out	1,283	1438

Soybeans	Apr USDA—07/08	Mar USDA—07/08
Carry-in	574	574
Production	2,585	2,585
Total Supply	3,169	3,165
Crush	1,840	1,835
Exports	1,075	1,025
Seed	92	86
Residual	2	77
Total Use	3,009	3,025
Carry-out	160	140

Wheat	Apr USDA—07/08	Mar USDA—07/08
Carry-in	456	456
Production	2,067	2,067
Total Supply	2,613	2,613
Food	950	950
Seed	86	86
Feed & Resid	60	110
Exports	1,275	1,225
Total Use	2,371	2,371
Carry-out	242	242

Delivery, Basis and Cash Bids for Ceres Solutions Elevators as of Tuesday April 15th.

	Delivery	Basis	Cash
Pleasant Ridge # 2 Yellow Corn	Apr 08	-0.25	5.67
	May 08	-0.23	5.69
	Jul 08	-0.20	5.85
	Fall 08	-0.49	5.64
	Apr 08	-0.53	13.20
Soybeans	May 08	-0.50	13.23
	Jul 08	-0.64	13.25
	Fall 08	-0.99	11.88
	July 08	-1.95	7.16
	Kersey # 2 Yellow Corn	Delivery	Basis
Apr 08		-0.34	5.58
May 08		-0.32	5.60
Jul 08		-0.28	5.70
Fall 08		-0.55	5.58
Soybeans	Apr 08	-0.63	13.10
	May 08	-0.60	13.13
	Jul 08	-0.74	13.15
	Fall 08	-1.05	11.82
	July 08	-2.00	7.11
Roselawn # 2 Yellow Corn	Delivery	Basis	Cash
	Apr 08	-0.34	5.58
	May 08	-0.32	5.60
	Jul 08	-0.28	5.70
	Fall 08	-0.55	5.58
Soybeans	Apr 08	-0.63	13.10
	May 08	-0.60	13.13
	Jul 08	-0.74	13.15
	Fall 08	-1.05	11.82
	July 08	-2.00	7.11
Teft # 2 Yellow Corn	Delivery	Basis	Cash
	Apr 08	-0.35	5.57
	May 08	-0.33	5.59
	Jul 08	-0.31	5.74
	Fall 08	-0.58	5.55
Soybeans	Apr 08	-0.64	13.09
	May 08	-0.61	13.12
	July 08	-0.75	13.14
	Fall 08	-1.05	11.82
	July 08	-2.00	7.11
Ade # 2 Yellow Corn	Delivery	Basis	Cash
	Apr 08	-0.34	5.58
	May 08	-0.32	5.60
	Jul 08	-0.30	5.75
	Fall 08	-0.57	5.56
Soybeans	Apr 08	-0.63	13.10
	May 08	-0.60	13.13
	July 08	-0.74	13.15

Wheat Cherry & Whitesville # 2 Yellow Corn	Fall 08	-1.05	11.82
	July 08	-2.00	7.11
	Delivery	Basis	Cash
	Apr 08	-0.18	5.74
	May 08	-0.20	5.72
Soybeans	July 08	-0.20	5.85
	Fall 08	-0.60	5.53
	Apr 08	-0.55	13.17
	May 08	-0.52	13.20
	Fall 08	-1.11	11.76
Wheat Wingate # 2 Yellow Corn	June/ July	-2.00	7.10
	Delivery	Basis	Cash
	Apr 08	-0.23	5.69
	May 08	-0.28	5.64
	July 08	-0.30	5.98
Soybeans	Fall 08	-0.65	5.48
	Apr 08	-0.57	13.15
	May 08	-0.53	13.19
	Fall 08	-1.15	11.72
	Delivery	Basis	Cash
Browns Valley # 2 Yellow Corn	Apr 08	-0.29	5.63
	May 08	-0.33	5.59
	July 08	-0.35	5.93
	Fall 08	-0.69	5.44
	Apr 08	-0.65	13.07
Soybeans	May 08	-0.58	13.14
	Fall 08	-1.20	11.67
	Jan 09	-0.76	12.15
	Delivery	Basis	Cash
	Brazil # 2 Yellow Corn	Apr 08	-0.34
May 08		-0.25	5.67
June 08		-0.33	5.72
July 08		-0.28	5.77
Fall 08		-0.70	5.43
Soybeans	Apr 08	-0.52	13.21
	May 08	-0.50	13.23
	Fall 08	-1.17	11.70
Wheat	Jun 08	-2.35	6.76
	July 08	-2.35	6.76
	Delivery	Basis	Cash
Clay City # 2 Yellow Corn	Apr 08	-0.36	5.56
	May 08	-0.30	5.62
	Jun 08	-0.32	5.73
	July 08	-0.28	5.77
	Fall 08	-0.70	5.43
Soybeans	April 08	-0.55	13.18
	May 08	-0.50	13.23
	Jun 08	-0.60	13.29
	July 08	-0.53	11.67
	Fall 08	-1.20	11.67
Wheat	Jun 08	-2.40	6.71
	July 08	-2.40	6.71

Corn Planting Date Cont.

this year is only 160 bu/ac, then the consequence of a 10-day planting delay beyond May 1 (at 1 bu/ac/day) would be a yield potential of 150 bu/ac (i.e., 160 bu/ac potential minus 10 bu/ac due to delayed planting). Make sense?

Consequently, it is possible for early-planted corn in one year to yield more than, less than, or equal to later-planted corn in another year depending on the exact mix of YIFs for each year. That is the reason why statewide average corn grain yields frequently vary by plus or minus 10% from the expected trend yield from year to year.

Bottom Line -Let's not succumb quite yet to fear mongering triggered by the prospects of a delayed start to corn planting in 2008. "Mudding in" a crop early to avoid planting late will almost always end up being an unwise decision. While important, planting date is only one of many yield-influencing factors for corn.

Another reason that it is probably too early to fear monger about the anticipated late start to planting is that growers have the machinery capacity to "catch up" quickly once the weather and soil conditions become favorable for planting.