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Current News and Updates

There are a number of things to consider over the next couple of weeks before planting. As the snow melts and temperatures rise, we often feel eager to start our planting season. I want to stress the importance of evaluating planting conditions and considering the risks of planting before the Federal insurance planting dates. A corn planting date from mid-April to early or mid-May has the potential to produce strong yields. That being said, rushing to plant when conditions are less than ideal can have dramatic yield limiting effects all season long. Fertilizer application and timing are also critical components to help maximize yield potential. While timing can be difficult and weather can complicate matters, our goal should be to minimize nutrient loss and maximize plant uptake. Evaluating corn and soybean stands is a task that should be conducted early to set up yield expectations. There is still time to make seed treatment decisions. Early-season protection from insects and diseases can be important for stand establishment and early-season vigor.

The final article in this newsletter is to get you thinking about black cutworm (BCW) infestations in corn. These little pests migrate via wind patterns from the far south U.S. and can cause considerable damage essentially overnight, which is actually when they feed. Planting a Genuity® SmartStax® trait package will offer protection against BCW. Prioritizing those plantings on potentially problematic fields, those that are weedy or sprayed late, can be beneficial. If utilizing other Monsanto trait packages, foliar insecticide applications may be warranted if BCW populations exceed economic thresholds.

Planting Dates and Conditions

As warm days begin to accumulate this spring, it is natural to start thinking about getting a jump on planting. Growers should consider the benefits and risks associated with early planting before getting into the field.

If growers with Federal crop insurance plant before the earliest allowable planting dates according to the USDA—Risk Management Agency, they will forfeit replant coverage, even if the need for replant is not due to early planting. In Minnesota the earliest allowable planting date is April 11 for corn in most counties and April 21 for soybean. In Wisconsin the earliest planting date for corn is April 11 for most of the state and April 21 in the far northern counties. For soybean the date is April 26 for all counties in Wisconsin. While planting early can help maximize yield potential, there is

(cont. p 4)

Table 1. Relative corn yield potential with different planting dates and populations.

Planting Date	Plant Populations (x 1000) Per Acre							
	10	15	20	25	30	35	40	45
	% of Maximum Yield							
4/20—5/5	71	81	89	95	99	100	99	97
5/5—5/15	68	78	85	91	95	96	95	93
5/15—5/25	62	71	77	83	86	87	86	85
5/25—6/5	50	57	63	67	69	70	69	68
6/5—6/15	38	44	48	51	53	54	53	52

Values based on preliminary research and modeling; 100% yield potential is estimated to occur with 35,000 plants per acre and early planting. Source: Corn field guide. 2009. Iowa State University Extension. Online: http://www.agronext.iastate.edu (verified 5/28/13).

Nitrogen Management for Corn

The goal of nitrogen (N) management in corn is to supply N when the crop needs it and minimize N losses. Corn N needs are low during early vegetative growth, but increase once corn reaches the V8 stage of growth through tasseling.

A spring anhydrous ammonia application is one tactic to help provide N to corn plants when it is needed. Planting seed too close in time and proximity to an anhydrous application can be problematic because of the potential for seedling injury, particularly in dry weather. Injury from ammonia can be seen as a die-back of the root tips and general desiccation of roots. The first indications of injury may be uneven emergence, slow plant growth, and plants wilting in dry weather. Ammonia injury is noticed more frequently in dry weather because slow developing and damaged roots can limit uptake of available water.

To help minimize the risk of anhydrous injury:

- Inject ammonia 7 to 8 inches deep to maintain a 3 inch buffer between the seed and the ammonia band. Expect ammonia to diffuse 2.5 to 3 inches from the point of injection, which creates a 5 to 6 inch diameter cylinder of ammonia, in the 24 hours after application. Consider the use of a nitrogen stabilizer.
- Apply ammonia at a slight angle relative to future planted corn rows. This can help limit the exposure of corn seed to the ammonia and reduce the potential of injury to entire rows. Strip-till farmers should be extra cautious as the ammonia is directly below planted seed.
- Make sure the slot closes behind the knife to limit ammonia loss and movement upwards toward the seed. Subsoil glazing may occur as the knives cut through the soil if it is moist, which has the potential to keep the ammonia from dissipating into surrounding soil. If the soil is dry, deepen the application to help reduce upward movement.
- In general, delay planting for several days after application, particularly if application occurs under dry conditions or soils are coarse textured.

In-season applications of nitrogen fertilizer can further spread out the risk of N loss and provide N closer to the time when corn plant demands increase. A side-dress application can supply N to the crop just prior to the time of maximum uptake and can be used to adjust for changes in the N management plan or if N deficiency symptoms develop. Generally, up to one-third of the total N can be applied in-crop around V6 to V8 stage of corn development. In-season applications have risks. Weather can delay applications or misapplied N can cause crop injury. A late spring N soil sample can be taken when corn is 6 to 12 inches tall and sent to a lab for analysis and recommendations. Injecting N into the soil or dribbling between rows can minimize volatilization and protect the crop from damage. A broadcast application of UAN when corn plants are small may also be a possibility. If corn plants are less than 6 inches tall, foliar damage is less likely to result in yield loss.

To reduce loss of N, nitrogen stabilizers can be added to N fertilizers. N-Serve® and Instinct® (nitrapyrin) inhibit soil bacteria responsible for denitrification, slowing the conversion of ammonium to nitrate. N-Serve can be used with anhydrous ammonia, dry ammonium, or urea fertilizers. Instinct is intended for preplant, preemergence or at-planting injection application with UAN. Agrotain® (NBPT) is intended for broadcast, surface-applied urea and UAN fertilizers. Agrotain inhibits soil urease conversion of urea to ammonia to allow more time for rainfall to incorporate urea-based fertilizers. Agrotain Plus is an additive for UAN solutions that has the urease inhibitor to reduce volatilization loss and dicyandiamide to retard nitrification.

Sources: Fernandez, F. Sidedressing nitrogen for the corn crop. 2011. The Bulletin. Issue No. 11. University of Illinois Extension. Online: http://bulletin.ipm.illinois.edu (accessed 3/25/13); Vitosh, M. L. What happens to anhydrous ammonia in soil. Field Crops Team. MSU. http://fieldcrop.msu.edu (accessed 3/21/13); Voss, R. 1993. Timing planting with anhydrous ammonia applications. Integrated Crop Management. Iowa State University. http://www.ipm.iastate.edu (accessed 3/21/13); Ferguson, R. 2009. Ammonia root burn on corn. CropWatch. UNL. http://liferaydemo.unl.edu (accessed 3/21/13); Franzen, D.W. Nitrogen extenders and additives. SF-1581. North Dakota State University. Online: http://www.ag.ndsu.edu (accessed 3/25/13).

Evaluating Corn and Soybean Stands

As corn and soybeans emerge, evaluating the stand is important to identify planting errors and other problems.

There are several common methods for taking stand counts. The 1/1000th acre method is widely used for corn and wide-row soybeans. A more accurate method is the wheel method, which counts 150 plants and measures the distance from start to finish with a measuring wheel. The hoop method is often used for drilled beans. Regardless of the method, evaluations should be performed multiple times at randomly selected locations within each field to get the most accurate assessment. When evaluating a corn or soybean stand, only count plants that have a good chance of survival. Keep in mind that while corn plant populations are a critical component of yield, soybean plants are better able to compensate for low plant populations. When evaluating stands, assess plant spacing uniformity. If stands are not uniform, determine the cause. Is it a planter issue? Is there soil crusting? Evidence of insect damage to the seed?

Sources: Illinois Agronomy Handbook. Online: http://extension.cropsci.illinois.edu (verified 3/28/13); Soybean replant decisions. 2000. Iowa State University. Online: http://www.extension.iastate.edu (verified 3/28/13).

Black Cutworm

Black cutworm (BCW) is one of the most damaging cutworm species in corn. In most cases, fields that harbor the greatest number of black cutworm larvae are those where corn was planted into soybean stubble or the field had large amounts of winter annual weed growth early in the spring.

Black cutworm should begin their spring migration from South Texas and Northern Mexico this month. While the past two years have had high populations, that does not mean 2013 will be an outbreak year. Female BCW will most likely lay eggs in fields with winter annual broadleaf weeds such as henbit, Sheppard's purse, and chickweed. In many cases these types of fields will be no-till fields or fields that did not receive fall tillage last year. When BCW eggs hatch, larvae can cause a great deal of damage to young corn plants by feeding on stems or leaves, clipping seedlings above or below ground level (Figure 1), or burrowing into stalks of larger plants.

Figure 1. BCW larva and cut plant.

The Genuity® SmartStax® trait provides control of BCW. Some cutting may occur with Genuity® SmartStax® RIB Complete® corn blend products as five percent of the seed is non-*Bt* seed. Acceleron® Corn Seed Treatment Products paired with Poncho®/VOTiVO® provide control of BCW.

Sources: Cook, K. et al. 2004. Black cutworm. Integrated pest management. University of Illinois Extesnion. Online: http://ipm.illinois.edu (accessed 3/25/13).

Managing Disease and Insect Pests in Early Planted Soybean

Delayed soybean emergence due to cool, wet soils can open the door for disease and insect problems to develop. A seed treatment may be valuable in fields where emergence is a concern.

When planting early, delayed emergence may occur given the cooler soil temperatures. Although the ideal soil temperature for soybean is 77° F, soybean can germinate when the soil temperature is about 50° F at 2 inches. Emergence may take as long as 3 weeks at this temperature. During this time of delayed emergence, soybeans are dormant and can be vulnerable to diseases and insects.[1]

Soybean seedlings can be infected by several fungi including *Pythium* and *Phytophthora.* Typical early symptoms are soft decay of seed, missing seedlings in the row, and poor emergence. *Pythium* may cause root rot and lesions on the stem or may cause stem tissue to become soft and watery (Figure 2). The soil fungus responsible for Phytophthora root rot is similar to *Pythium*. Evaluation of temperatures may help to distinguish the diseases. *Pythium* is usually the first disease to cause problems after planting since it is favored by cool soils below 60° F.[2] Damping off from *Phytophthora* occurs in warm soil (70 to 80° F). Plants can continue to be affected by *Phytophthora* throughout the season, whereas plants become less vulnerable to *Pythium* infection after the V2 growth stage. Soybeans planted in poorly drained or compacted soils are at greater risk for infection from *Phytophthora* and *Pythium.*

Figure 2. Typical symptoms of Pythium damping-off including lesions on hypocotyls and cotyledons.

Early planted soybeans are more likely to suffer damage from seedcorn maggots during a cool and wet spring when germination is delayed. Additional insects to watch for include wireworms and white grubs. Both of these insects are more likely to be problems in fields that were in sod or set-aside the previous year.[3]

Table 2. Active ingredients and the major pests controlled by Acceleron® Seed Treatment Products for soybean.

	Active Ingredients	Major Pests
Fungicides	Pyraclostrobin Metalaxyl Fluxapyroxad	• *Pythium* • *Phytophthora* • *Fusarium* • *Rhizoctonia*
Insecticides	Imidacloprid	• Bean leaf beetle • Soybean aphid • Seedcorn maggots • Wireworm • White grub

Seed treatments are one tool to help manage the risks of planting early. The Monsanto Acceleron® Seed Treatment Products for use with Genuity® Roundup Ready 2 Yield® soybeans contain active ingredients that can help protect against early–season pathogens, bean leaf beetle, early season aphid injury, and can improve early-season vigor and growth (Table 2).

Sources: [1]Pedersen, P. 2008. Soybean planting date can have a significant impact on yield. Iowa State University. Online: http://extension.agron.iastate.edu (accessed 3/25/13); [2]Staton, M. et. al. 2007. Soybean facts: early planted soybeans– benefits, risks, and recommendations. Michigan State University; [3]Insect pests of soybean. Plant Health Initiative. Online: http://www.planthealth.info (accessed 4/1/13).

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Planting Dates and Conditions (cont. from p 1)

a window of time for planting in which yields are projected to be close to their maximum potential. Table 1 illustrates the relative corn yield potential with different planting dates and populations. Consult your crop insurance agent for more information on earliest allowable planting dates and crop insurance coverage.

No matter what the calendar says, take note of soil moisture and temperature before deciding when to plant. Soil should be friable, easily crumbled when rolled in a ball and not crusted over when dry. Proper soil moisture helps avoid sidewall compaction that can develop at planting and can lead to complications the rest of the season. Uneven soil moisture can lead to uneven emergence. Corn requires soil temperatures of at least 50° F for even germination and emergence.[1] Soil temperatures can be measured at 11:30 AM with a 4-inch thermometer.[2]

Source: [1]Nielson, R. L. 2010. Requirements for uniform germination and emergence of corn. Purdue University. Online: http://www.agrypurdue.edu (accessed 3/25/13); [2]Agronomy guide for field crops. 2009. Ontario Ministry of Agriculture and Food. Online: http://www.omafra.gov.on.ca (accessed 3/25/13); USDA—Risk Management Agency. Online: http://www.rma.usda.gov (verified 5/28/13).