Crop Observation and Recomendation Network
C.O.R.N Newsletter 2010-05
March 9, 2010 - March 23, 2010

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A) March Weather Outlook - Jim Noel

The outlook for the spring is for slightly colder than normal temperatures with slightly drier than normal conditions northwest to slightly wetter south and east.

I have noted below an example of one of the climate models used. This is the Japan climate model. I used it here since the graphics are easier to read and it is similar to other models. The official outlook for spring is equal chances for both temperatures and precipitation but the tendency here appears toward the colder side of normal which might make planting a bit tougher. Also, the trend for drier northwest and wetter south and east seems like the trend to carry into spring until this trend changes. My guess it will change in May or so.

Japan Climate Model: http://www.jamstec.go.jp/frcgc/research/d1/iod/index.html, then click on Season Prediction UPDATE to see the temperature and precipitation models for March through May.

B) When to Apply N to Wheat - Edwin Lentz, Robert Mullen

Fortunately snow on the ground discouraged thoughts of February applications of N on wheat. Even as warmer temperatures move into Ohio, there should be no rush to apply N.

Research at Ohio State University has shown that N may be applied to wheat as late as Feekes 6 (early stem elongation) without diminishing yields. The university recommends a single application of total N between greenup and Feekes Growth Stage 6 when field conditions are suitable for equipment. Applications before greenup have the risk of severe N loss regardless of N source. Generally split applications are not recommended because of the extra costs associated with two applications (let alone the potential for greater field compaction with extra traffic). Delaying the application time to Feekes Growth Stage 6 would provide the same benefit as a split even in years of N loss.

• If a split program is desired, apply approximately 25% of the total N at greenup and the rest at Feekes 6, since most of the N is not needed until stem elongation. Price and availability usually determines the source of N but keep in mind the potential for loss associated with each product at application time.
• In general, ammonium sulfate has the least potential loss for N but also has the smallest percentage of N in its analysis, often making it the most expensive product.
• Urea-ammonium nitrate (28%) solution has the most potential for N loss since the nitrate portion will move with water and the urea component is vulnerable to volatilization losses.
• Urea is in the middle being vulnerable to volatilization losses.
• Fortunately temperatures generally are cool enough and rain events come soon enough that volatilization losses are minimal for both UAN and urea. However, anytime there is an extended dry period with warm temperatures and drying winds, volatilization losses may occur. It may be prudent to consider a urease inhibitor product if you anticipate these conditions. In general the potential for N loss will be greater the earlier the N application and will decrease as we approach Feekes Growth Stage 6 (about late April).

Also, keep in mind, if you need phosphorus in your crop rotation system, applying DAP will allow the wheat the use the N and provide P for the wheat and future crops. So consider your field P needs and the price of DAP or MAP at application time.

C) Frost Seeded Clover - Alan Sundermeier

As the cost of nitrogen fertilizer continues to increase, farmers may want to consider the practice of frost seeding a legume to their wheat crop to add natural nitrogen to the soil. The legume seed can be mixed with liquid or dry fertilizer and applied while topdressing wheat this spring. The freezing and thawing action of the soil will then help the legume seed move into the soil and begin growth once temperatures begin to warm up. The legume continues to grow as the wheat crop matures. By late fall or early spring, the legume is destroyed by herbicides or tillage. Corn is then planted to take advantage of any natural nitrogen in the soil which was produced by the legume.

The debate among farmers and scientists has centered on how much nitrogen the legume actually captures and how much of that is released to a subsequent corn crop. The economics of the investment of legume seed and extra production management need to be outweighed by the amount of nitrogen generated.

A successful establishment of legumes requires favorable weather conditions which provide enough moisture throughout the growing season. Hot, dry weather in the summer can greatly reduce legume growth and potential nitrogen contribution.

Once a legume has been established, it is difficult to predict the amount of nitrogen that will be available to the following corn crop. As the legume decays after tillage or herbicide treatment, the conversion into nitrate nitrogen usable for the corn crop will occur when soil moisture and temperature are favorable. Also leaching or volatilization of nitrogen may occur before nitrogen is available to the corn.

Other benefits of legumes are soil quality improvements such as the ability to reduce compaction, creating a habitat for soil micro-organisms and earthworms, and a potential forage harvest. Even if no additional nitrogen was produced by legumes, these soil quality benefits alone may improve corn yields.

Take home message – our data does not suggest dramatically cutting nitrogen rates when a cover crop is established (perhaps 30 pounds of nitrogen), but we have not identified conditions when the nitrogen contribution is more likely to occur. It does appear that in the poorly drained soils of northwest Ohio that a rotational benefit is likely to be observed when a legume cover crop is planted.

D) Foliar Manganese on Glyphosate Tolerant Soybeans - Keith Diedrick, Robert Mullen, Mark Loux

A few recent articles in the farm magazines and newspapers are describing yield losses due to manganese (Mn) deficiency when glyphosate is applied to glyphosate tolerant soybeans. Scientific literature shows that efficacy (or herbicide effectiveness) of glyphosate can be reduced by nutrient metals (calcium, iron, magnesium, Mn, etc) as a result of chelation or complexing in spray solutions. Less clear is whether or not glyphosate tolerant soybeans that receive glyphosate applications affect Mn metabolism in plant tissue or Mn uptake from soil solution. A few studies have shown glyphosate tolerant soybeans that do respond to Mn when compared to non-tolerant beans, but this is not necessarily due to the presence of the glyphosate tolerant gene. Other studies, including one at Purdue in 2002, show that there are glyphosate tolerant soybean varieties that respond to Mn and some glyphosate tolerant varieties that do not respond when compared in the same plot and season. This leads us to consider that other factors (other than glyphosate tolerance) including soybean variety may be responsible for the yield response (or lack thereof) from Mn application. Most interactions between glyphosate and soybeans occur when Mn is likely to be deficient (pH >6.5, high OM, and peat/muck with pH >5.8, dry growing season), and more published research than not suggests that we manage glyphosate tolerant and conventional soybeans similarly (Hartzler, 2010). As we always say, if there's not a deficiency or limitation, adding a nutrient will not add yield.

Many studies in the Midwest show that the application of Mn gives us mixed and inconsistent results in terms of yield response. Our field research in the last three years addressing Mn-glyphosate interactions has not shown yield losses

due to glyphosate application (no Mn) on glyphosate tolerant soybeans compared to the same variety with no glyphosate application (we did not have the soybean isoline that did not contain the glyphosate tolerant gene). We did see one instance of a yield increase from applying Mn at the Northwest Research Station (near Custar, OH), but timing (tank-mixed Mn+glyphosate or glyphosate followed by Mn 10 days later) was not a factor. What should be noted was the rainfall pattern of that particular growing season. There were periods of drought stress evident. Drought stress can induce Mn deficiency.

One might think that adding Mn to the POST application of glyphosate in tolerant soybeans is simply “cheap insurance” and will not be detrimental to the soybeans. Well, in 2008 and 2009 at OARDC Western Research Station (South Charleston, OH), Mn applications actually reduced soybean yield. As with any product, follow the principles of IPM and apply only as necessary.

If one is thinking about Mn, consider the following:
1. Does the field have factors that exacerbate Mn deficiencies? (I.e. high pH, high organic matter, or history of Mn deficiencies)
2. Scout fields for Mn deficiency symptoms (yellow to white leaves with prominent green veins on newer growth) and tissue test (submit 20-30 of top open trifoliate leaves of plants, <20ppm is deficient for soybeans).
3. Use a chelated form of Mn, like liquid Mn-EDTA. Avoid the salt form ($MnSO_4$).
4. If tank-mixing, mixing order is important. Start with water, add AMS, add Mn, add glyphosate last.

Dr. Bob Hartzler from Iowa State just published a great article on soybeans, glyphosate, and Mn:
http://www.weeds.iastate.edu/mgmt/2010/glymn.pdf

Past CORN articles on Mn on soybeans in Ohio:
http://corn.osu.edu/story.php?setissueID=301&storyID=1825
http://corn.osu.edu/archive/2003/jul/03-21.html#linkf

E) What are the new refuge requirements for 2010? - Andy Michel, Ron Hammond, Bruce Eisley

There has been much talk about potential changes in refuge requirements for corn expressing Bt traits which may cause some confusion for the upcoming 2010 growing season. The biggest potential change has been the discussion about using mixed refuges, or “refuge-in-a-bag.” As of 2010 the refuge in a bag strategy has not been approved for any transgenic corn product.

However, there has been one significant change in refuge requirements for 2010 involving the new Smartstax hybrid. Because this product contains 3 different genes for Lepidopteran control and 3 different genes for rootworm control, the EPA has approved a reduction of the standard 20% refuge to 5% refuge. Thus, up to 95% of your field can be planted with Smartstax and 5% must be planted with corn not containing a Bt trait. This 5% refuge is a separate refuge (not mixed) and must be placed within or adjacent to the Bt field. The refuge for all other Bt transgenic hybrids remains at 20%.

For full descriptions of refuge requirements for 2010 for all products, please contact your seed dealer.

F) Corn Flea Beetle and Stewart’s Bacterial Leaf Blight - Ron Hammond, Pierce Paul, Andy Michel, Dennis Mills, Bruce Eisley

The bacterium that causes Stewart's bacterial leaf blight is carried and spread by the adult corn flea beetles. The beetle over-winters as an adult in the soil near corn fields. Flea beetle adults become active in the spring when the soil temperatures reach 65 F. Adults are most active on sunny, warm, windless days. If the adult fed on diseased corn in the late summer or fall, it may carry the bacterium that causes Stewart's disease of corn in its gut over the winter. In the spring, the flea beetles feed on the young plants and spread the bacterium which in turn causes seedling wilt and leaf blight. The occurrence of Stewart's bacterial disease is totally dependent on the level of bacteria-carrying flea beetle survival over the winter. For many years the winter temperatures have been used to predict the risk of Stewart's disease because higher populations of the flea beetle survive during mild winters than during cold winters. The 'flea beetle index' is

calculated as the sum of the average temperatures (Fahrenheit) of December, January and February.

- Index values less than 90 indicate negligible disease threat,
- 90-95 indicate low to moderate levels,
- 95-100 indicate moderate to severe and
- values over 100 predict severe disease threat.

We checked the average temperature for those months at locations in Ohio to determine the risk level according to the 'flea beetle index' for 2010.
The locations and the corresponding indexes were:
Wooster (OARDC), 80.5;
Ashtabula, 81.0;
Hoytville (Northwest Research Station), 86.8;
South Charleston (Western Research Station), 81.0;
Jackson, 88.6; and
Piketon, 90.1.

Compared with last year (C.O.R.N. 2009-05) it appears that northern Ohio was slightly warmer while southern Ohio was relatively cooler in terms of the index, although the overall risk of Stewart's bacterial leaf blight should remain low in much of Ohio, with only southern Ohio (Piketon) considered to have a low to moderate threat.

We would still recommend that growers scout for flea beetles, especially if they have planted a hybrid that is susceptible to Stewart's disease. For growers wishing to take preventive action against flea beetle, commercially applied insecticide seed treatments such as Cruiser and Poncho are labeled for flea beetles. You can see pictures of flea beetle injury and Stewart's bacterial blight, and get additional information on Stewart's disease of corn, on the Ohio Field Crop Disease web site at http://www.oardc.ohio-state.edu/ohiofieldcropdisease/corn/stewarts.htm. Additional information on the flea beetle can be obtained from OSU Extension Fact Sheet CV-1000-94.

G) Private Pesticide Applicator License Renewal by March 31st - Harold Watters, Glen Arnold

As March draws to a close farmers should make certain that they have attended the needed pesticide licensing recertification training if their private pesticide applicator license expires on March 31st 2010. In Ohio we have a two-part system for pesticide license renewal: you pay a renewal fee to the Ohio Department of Agriculture and you receive at least three hours of continuing education from OSU Extension. Only a few private pesticide recertification opportunities remain available across Ohio, and the dates will pass rapidly. They are listed at the Pesticide Education web site: http://pested.osu.edu/ then click on private applicator.

Farmers who want add a category, or new applicators, can do so by taking an exam at one of the many Ohio Department of Agriculture (ODA) testing locations listed at the web site linked from the OSU Pesticide Education website. You can register on-line or by calling ODA before attending a testing session. Their toll free number is 1 800 282-1955.

H) Calendar of Agronomic Events for Late March - Harold Watters

For information on events from the OSU Agronomic Crops Team: http://agcrops.osu.edu/calendar/.

March 25
Crawford County Agronomy Day
Start Time: 8:00 AM
Crawford County Courthouse, 112 E. Mansfield Street, Bucyrus
Cost: $25 prior to 1/20 & $30 at the door
PAT Credits Offered: Private: YES
Meeting Coordinator: Steve Prochaska
Phone Number: 419-562-8731
e-Mail: prochaska.1@osu.edu

Agenda Web Link: http://crawford.osu.edu

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C.O.R.N. is a summary of crop observations, related information, and appropriate recommendations for Ohio Crop Producers and Industry. C.O.R.N. is produced by the Ohio State University Extension Agronomy Team, State Specialists at The Ohio State University and Ohio Agricultural Research and Development Center. C.O.R.N. Questions are directed to State Specialists, Extension Associates, and Agents associated with Ohio State University Extension and the Ohio Agricultural Research and Development Center at The Ohio State University.

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