It is now becoming a broken record….rain, rain, rain. I have been at our national Ag Agents Conference in Sioux Falls, South Dakota this week and I am hearing similar reports from all over the corn belt. Some bright spots and some miserable spots. According to our weather update by Jim Noel looks like the remainder of July will be more favorable to us. (cross your fingers!). Have a good week.

David Marrison, AG Educator

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Northeast Ohio Crop Update
Les Ober, CCA & Program Assistant in Geauga County

Driving around the area it is not hard to ignore soybeans fields that have a yellow color. This primarily due the wet weather we have been experiencing. What is happening is that the beans are not nodulating properly and as a result the plant is not getting enough nitrogen.

The soybean plant requires 300 to 400 pounds of nitrogen a year to grow but we do not worry about supply that nitrogen because the plant supplies its own nitrogen through a process called nitrogen fixation. The soybean plant produces all of the nitrogen it needs to grow and a little extra (one pound of organic nitrogen for every bushel produced) for subsequent crops. This process is dependent on the plant achieving a symbiotic relationship with Rhizobia Bacteria. The bacteria bond to the roots living in a tissue growth called nodule. The bacteria absorb atmospheric nitrogen N2 and convert it to ammonium NH4 which is utilized by the plant. Both the plant and the organism need to be present for the plant to survive or at least grow vigorously.

What happens when Rhizobia bacteria are not present? The lack of beneficial Rhizobia bacteria results in poor nodulation, resulting in yellowing. The reason for plant yellowing this season is too much water. A water logged soil will not have enough oxygen available for plant or bacterial growth. The result is a plant starving for nitrogen. This is why we say that soybeans do not like wet feet. Once it dries out normal Rhizobia growth should. If there is no improvement you might want to consider adding some nitrogen to the crop. If there has been continue and the beans will usually green up. This can also happen in normal years when soybeans are planted in a soil with no previous history of soybeans and low Rhizobia populations. The solution to this problem is to heavily inoculate your bean with a good brand
of soybean inoculant at planting time. This is usually enough to keep the soybeans healthy also providing enough bacteria to kick start a new Rhizobia population.

Outside factors such as moisture, soil pH, and soil quality will have a direct effect on plant and bacterial growth. The best way to determine how well you soybean plants are fixing nitrogen is to go to the field and randomly dig up soybean plants and examine the root systems. Nodule development starts at V-2 and continues through R-5. At V-3 you should see about 10 nodules per plant. If there are less than 5 then you need to wait 10 days and revisit that area of the field. Excessive rainfalls then you need to let the soil dry out. Check the water soaked plants for nodules prior to the soil drying out. Use the result of this examination as a reference point to determine if nitrogen fixation has improved with the drying of the soil. If there is no improvement you might want to consider adding some nitrogen to the crop.

Adding Nitrogen (20 to 40 lbs. of N) can be beneficial and may help plant growth in both of these scenarios. Applications of rates above this are not beneficial and in some cases can retard the nitrogen fixation process. Use dry urea with a stabilizer and never use broadcast 28% UAN because of the risk of leaf burning. The success of your soybean crop is dependent on the plants ability to produce nitrogen for growth and seed development.

**NE Ohio Crop Progress Report**

Corn: is now between V-11 and tasseling. Early planted corn looks good but there is a ton of yellow stunted corn across the area. Some of this has improved with the application of nitrogen.

Soybeans: Soybeans have reached the flowering stage of the two crops corn and soybeans, soybeans seem to be coming through this wet weather in relatively good shape. The exception is beans planted in low lying fields.

Wheat: Bad news; low yields, plus high moisture, plus low test weights, plus the risk of sprouting spells disaster for the wheat crop. At this point document everything for you crop insurance adjuster. The only good news is that there is very little head scab and hardly any vomitoxin. That is not the case across the rest of the state.

Forages: the only thing in worse shape than the wheat crop, is the first cutting hay crop. Right now, if you are a hay producer, the only you can do is find an outlet for low quality hay at some price. That being said there may be a demand for your crop because there is nothing else on the market and it may look real good come winter. For those feeding there hay you may want to wait for the second growth to emerge. This should improve the palatability of your crop even though it will not do much for the quality. Plan on feeding more grain this winter and if you need a lot of grain lock in a price now while the price of corn is low. That may not be true come January 2016.

**Weather Update-July 14, 2014**

By Jim Noel

The first half of July started cool and wet as expected. The question is will the second half turn warmer and drier as we expected a few weeks ago. The overall answer is yes. Overall, weather, climate and hydrology conditions will improve in Ohio after the start of this week.
into the end of July.

After a wet start to this week we expect a drier Wednesday and Thursday. However more showers and storms will return Friday into the weekend. But the pattern looks to be heading toward a more summer-like pattern where the rainfall pattern becomes more scattered and typical after this week.

At the same time, temperatures will become warmer than normal. With all the moisture in the ground, we continue to see daytime temperatures kept down some and nighttime temperatures elevated and this will continue with the overall tendency toward slightly warmer than normal temperatures.

Second half of July outlook

- Temperatures Risk...slightly above normal (mostly from overnight lows) highs mostly in the 80s and lows in the 60s.
- Rainfall Risk...becoming more normal and scattered after this week most places 2-4 inches next 3 weeks. Normal is 3 inches.
- See our NOAA/NWS/Ohio River Forecast Center ensemble mean 16-day rainfall outlook updated daily here: [http://www.erh.noaa.gov/ohrfc/HAS/images/NAEFS16day.pdf](http://www.erh.noaa.gov/ohrfc/HAS/images/NAEFS16day.pdf)
- Drought Risk...none
- Flood Risk...minor west and north Ohio this week then limited as some drying occurs
- Heat Risk above 90...limited

August outlook

- Temperature Risk...normal
- Rainfall Risk...return to slightly above normal.
- Drought Risk...none
- Flood Risk...slightly elevated but nothing like what occurred in first half of summer
- Heat Risk above 90...limited

Finally, El Nino is in full swing in the equatorial Pacific Ocean and is likely to strengthen in a significant El Nino for fall and winter. El Nino will likely persist into spring growing season next year and will play havoc with our weather, climate and hydrology patterns in Ohio. Our research shows during El Nino events crops are stressed in Ohio form significant changes in our weather patterns. Impacts are greatest to wheat and corn and to a lesser extent soybeans.

How Much N Has Been Lost This Year?
By Steve Culman and Greg LaBarge

Rain. Rain. Rain. With excessive rain, chances are good most fields across this state have lost more N than in a typical year. But how much have they lost? Everything applied? Is all of the N fertilizer gone? Although it’s difficult to estimate, it’s very unlikely that the majority of the N applied has been lost.

Nitrogen losses in Ohio fields occur by two main pathways: denitrification and leaching. Both pathways occur with nitrate (NO3-), a form of nitrogen that is readily available for plant uptake, but also susceptible to environmental loss. Denitrification is more prominent in
heavy, poorly drained soils while leaching occurs more in lighter, well drained soils. Most soils will experience some N loss through both pathways, but the proportion from the two pathways can vary dramatically between soils.

Denitrification is the gaseous loss of soil nitrate. It is a microbially-driven process that occurs to some degree throughout the growing season, but is especially problematic when soils are saturated and oxygen is depleted. Saturated soil in late spring/early summer are especially prone to N losses by denitrification since it is a time when many fields have N fertilizer applied upfront and crop uptake of N is very low. This can create an environment when soils are N saturated and denitrification is rampant. Many factors influence denitrification, but the three most important are 1) saturated, anaerobic soil; 2) quantity of nitrate present; and 3) presence of crop residue on soil surface. Soil N losses from denitrification vary greatly year to year, but can range from 2-25% in well-drained soils and from 6-55% in poorly drained soils. Note that tiled fields would generally not be considered poorly drained.

Leaching is the other main pathway of N loss. Unlike denitrification, nitrate leaching is not a microbial reaction. It is the loss of soil nitrate below the rooting zone by water. Nitrate leaching is heavily influenced by soil water flowing through the profile, which in turn depends on total rainfall and crop uptake. Like denitrification, N leaching is very common in late spring/early summer, especially with saturated soils. Tiled fields may lose 30-40% of applied fertilizer annually, but again, precipitation patterns and crop cover strongly influence losses by leaching.

Farmers can reduce chances of N losses from denitrification and leaching in a variety of ways. Perhaps the most important is timely applications of N fertilizer via side dressing. Other practices include rotating with winter wheat, cover crops or forages, use of nitrification or urease inhibitors, and use of controlled release fertilizers. Although sound N management is incredibly important for crop nutrition, some years prove to be especially challenging, as this year is demonstrating.

References:
Havlin et al. 2014. Soil Fertility and Fertilizers

Minimizing the Damage

by - John F. Grimes, OSU Extension Beef Coordinator

The 2015 growing season has proven to be challenging to producers in Ohio. Nearly all crops have been impacted by plentiful and in many cases too much rain. Forage production is certainly no exception to this reality as both hay and pasture production have felt the effects of excessive moisture. One doesn’t want to complain too loudly about excessive rainfall given that large areas of the country are still under significant drought. However, this growing season has created some significant management decisions for forage producers.

Very little hay production has not been impacted by excessive rains. Timely harvest has been nearly impossible as evidenced by the fact that some first cuttings have yet to be completed and second cuttings have been significantly delayed. This reality will probably reduce yields in some cases and will certainly reduce feed quality nearly everywhere. There are numerous research studies that indicate significant delays in harvest date will result in lower protein content as well as higher acid detergent fiber and neutral detergent fiber levels.
Results from evaluations at the 2015 Ohio Beef Cattle School indicate the use of laboratory analysis to determine feed quality is a woefully underutilized management tool by producers. When asked "Which of the following best describes your approach to using feed evaluation tests to determine feed quality?", attendees gave the following responses:

A. I conduct feed analysis on primary feed groups annually. 20%
B. I conduct feed analysis on primary feed groups only when feed costs are high. 0%
C. I conduct feed analysis on primary feed groups only when feeds have been impacted by weather conditions. 4%
D. I rarely conduct feed analysis on primary feed groups. 37%
E. I never conduct feed analysis on primary feed groups. 38%

As you can see, 75% of the respondents indicated that they rarely or never conduct a feed analysis. Given the anticipated reduction in feed quality due to delayed harvest, 2015 would be the perfect time to start doing analysis of your forages. An analysis of your hay supply will allow you to determine the feed value of the forage which will help you to make educated decisions in regards to next winter’s feeding program. You will know if you have adequate quality for growing animals and females in late gestation or early lactation. If the feed quality is below the required values, the producer can make plans to purchase grains or higher quality hay to compensate for potential ration shortcomings. By performing a timely forage analysis, the producer may also be able to make supplemental feed purchases when supplies and prices may be more favorable.

Pasture situations have been impacted by excessive rains as well but the issues are uniquely different from hay production. Pasture growth has been impressive with the notable exception of poorly drained fields. There have also been excellent growing conditions for weeds. Thankfully, pasture weed control doesn’t require a potential three day drying window as does hay production. It does require solid ground conditions to clip or spray pastures for weed control management. Probably the biggest issue created by saturated soils has been foot traffic damage to forage and the soil surface by grazing livestock.

The upcoming fall season offers some options to improve or supplement grazed forages. If pasture damage is significant, interseedings or complete renovations need to be completed by early to mid-September across Ohio. Annual forages such as oats or rye may be planted as a part of a renovation plan for pastures to be seeded in the spring of 2016 or in fields that were not planted earlier in 2015. Do not forget about the tried and true practice of stockpiling. Stockpiled forage growth can begin by mid-July in northern Ohio and August 1 in southern Ohio. 50 lbs. of actual nitrogen per acre applied when the stockpiling period is initiated offers an opportunity to optimize forage yield and quality.

There is no doubt that the growing season in 2015 has created issues for forage and beef cattle producers. We can currently see the impacts of excessive moisture in forage fields around the state in the form of overly mature hay fields and damaged pastures. Unfortunately, these impacts can have long-term impacts on the performance of beef cattle. I encourage you to utilize feed analysis and other aggressive management practices to minimize the damage we have experienced in our hay and pasture fields to help insure a productive and profitable beef enterprise.
ODA Announces Farm Pesticide Collection in Canfield, Ohio
The Ohio Department of Agriculture will be sponsoring a collection for farmers wishing to dispose of unwanted pesticides on Aug. 13 from 9:30 a.m. to 2 p.m. at the Mahoning County Fairgrounds, 7625 Columbiana-Canfield Road, Canfield, OH 44406. The pesticide collection and disposal service is free of charge, but only farm chemicals will be accepted. Paint, antifreeze, solvents, and household or non-farm pesticides will not be accepted. Pesticide collections are sponsored by the department in conjunction with the U.S. Environmental Protection Agency. To pre-register, or for more information, contact the Ohio Department of Agriculture at 614-728-6987.

Entries for 169th Annual Ashtabula County Fair Being Taken
In little less than one month, the Ashtabula County Fair will be in full swing. However, the fair office opened this week and entries for this year’s fair are now being taken. There is an entry for everyone. The entry categories include: dairy cattle, beef cattle, draft horses, goats, hay & silage, agriculture, horticulture, floriculture, culinary, canned goods, needlework, crafts, arts, grange, honey, maple syrup, wine, and photography. Each of these categories has lots of options for entries, so make sure you enter your best of the best. Fair entries will be taken until Tuesday, August 4, 2015 and most items for exhibit must be brought to the fairgrounds on Monday, August 10 between 9 a.m. and 6 p.m. Complete entry details can be found on the Ashtabula County’s fair website at: www.ashtabulafair.com or be obtained by calling 440-576-7626 or 440-576-0557. See you at the 169th Ashtabula County Fair!

Invasive Insects Workshop Set for July 23 in Chardon, Ohio
The Ohio Woodland Stewards Program will present FOREST HEALTH: Invasive Insects—a workshop for landowners faced with the challenge of numerous invasive insects changing their wooded landscape. The workshop will explore what you can do about the insects that are here in Ohio as well as those in nearby states. An outdoor afternoon field trip will explore the wooded area at Big Creek Park to see the impacts of some of these insects. The workshop begins with registration at 8:30 a.m., July 23 at the Big Creek Park, Geauga Park District, 9160 Robinson Road, Chardon.

Pre-registration is required by July 16. Cost is $35 per person, which includes educational materials and lunch. For more information, contact 614-688-3421, ohiwoods@osu.edu, or go to http://woodlandstewards.osu.edu to register online and to download the brochure. Several payment options are available. The agenda includes: Introduction to Invasive Insects, Emerald Ash Borer, Asian Longhorned Beetle, Viburnum Leaf Beetle, Spotted Lantern Fly, Thousand Canker Disease, Hemlock Woolly Adelgid, Gypsy Moth, What To Do If You Find One, and In the Field – Impacts of the Insects on the Forest.

The instructors are Kathy Smith, forester and director, Ohio Woodland Stewards, and Erik Draper, assistant professor, Geauga county director and Extension horticulture educator, both with Ohio State University Extension. Participants in the Ohio Forest Tax Law program are eligible for five hours of continuing education credit. OSU Extension sponsors the Ohio Woodland Stewards Program in cooperation with the Ohio Division of Forestry to help people manage their trees, forests and related resources.

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