Should You Spray Your Wheat?

This March wheat growing season has been cool and wet. In Monroe, rainfall was 0.25 inches greater than normal with average daily temperatures of 2.6 degrees below normal. These cool and wet conditions are likely to bring favorable conditions for disease and insect pressure. We have included illustrations and treatment thresholds for your reference recommendations for three of the most common wheat fungal diseases. Also this growing season has been one that has resulted in slow growth and sparse stands. These two conditions greatly favor Cereal Leaf Beetle problems. Many of you have included an insecticide with your topdress nitrogen. This isn’t a recommended practice by NCSU due to the increased risk of resistance developing and if not applied at the right time can kill beneficial predators and potentially make the Cereal Leaf Beetle infestation worse. Though this process does seem to provide control it doesn’t ensure it. It is still advisable that you scout your fields for CLB infestations and treat according to thresholds. We have attached information from the NC Agriculture Chemical manual for treatment recommendations for specific grain pests on the last 2 pages of this publication.

Powdery Mildew:
Spray if:
• 5 to 10% upper leaf area is infected
• 55 Bu or higher yield potential

Septoria Leaf Blotch:
Spray if:
• 25% of indicator leaf has lesions
• From 1st joint to flag leaf – 4th or 5th leaf below flag leaf
• Flag leaf to boot-3rd leaf below flag
• Late boot to flowering - 2nd below flag
• Flowering to medium milk-1st below

Leaf Rust:
Spray if:
• 1 to 3% of upper leaf area is infected
• 55 Bu or higher yield potential

Cereal Leaf Beetle
Adult and Larvae

CAUTION: Information & recommendations presented are applicable in the Southern Piedmont of NC & may not apply in your area. Consult your local Extension agent.

Recommended reading:
http://pubs.caes.uga.edu/caespubs/pubcd/B1190.htm
I’ve gotten my soil test results back, now what?

Hopefully by now you have all gotten your soil tests back, but for those who may have some last minute ones to take, the current turn around time for samples sent to NCDA is 2-3 weeks. In the reports that you have received, you may notice that some fields require lime while others don’t. You may be asking yourself why this is and just how important lime is. Fertilizer prices have been high for the past two years; shouldn’t you be spending money on fertilizer instead? Well the short answer to this, No! When you think about it lime is fertilizer, sort of a natural fertilizer. Allow me to explain.

Soils in this part of the world are naturally acidic, meaning that they have a low pH. This is primarily due to the type of clay that they contain as well as the annual amount of rainfall we receive. Rainfall is naturally acidic with a pH of generally 5.7, but can be lower, meaning more acidic depending on the type of pollutants it contains. If this isn’t bad enough, when this water leaches through the soil it takes with it Nitrogen. This nitrogen is generally in the form of NO_3^- This negatively charged particle is called an anion. Water in the soil must be electrically neutral, therefore when an anion leaves it takes with it a positively charged particle, called a cation. These are often, Calcium and Magnesium, two of the main ingredients in lime. We must add these ingredients to make the soil less acidic, so when they are lost naturally the soil becomes more acidic. On a side note, many of the necessary plant nutrients are cations. That little number on the bottom left of your soil report that says CEC stands for Cation Exchange Capacity. The higher this number, the “better” your soil is to a certain extent. Now just how many of you are sitting there thinking you owe your high school chemistry teacher an apology for saying “I’ll never use this stuff”?

Acid in the soil can also come from the use of commercial fertilizers. When they break down through the process known as nitrification, some acid is produced. Other sources of soil acidity are crop removal of nutrients and organic matter. Organic sources of nitrogen such as animal manures also have an impact on soil acidity, but this is often less noticeable as much of it contains calcium. This doesn’t mean that just because you are adding animal waste there is never a need to apply lime again. The amount of calcium varies widely from source to source, therefore you should never avoid soil sampling as a sound agriculture production practice!

Maintenance of proper soil pH can have numerous direct and indirect benefits. One of the direct benefits is the reduction in aluminum concentrations in the soil. High aluminum concentrations are probably the most limiting factor in acidic soils. This can result in stunted roots, less nodulation in legumes, less uptake and movement of essential plant nutrients and water, as well as less plant available phosphorous. Liming doesn’t directly affect aluminum concentrations; it just displaces it making it is less available and therefore less of a problem.

Other less direct effects of maintaining the proper pH through liming include an increase in available phosphorous, micronutrients are more available, nitrogen is converted to plant available sources faster and organic matter breaks down more rapidly. Another less direct benefit to proper pH maintenance is that crops growing in the proper soils within these soils are generally more competitive with weeds than those grown in less intensely managed soils.

Phosphorous is often fixed by Iron and Aluminum and made less available. When the proper pH is maintained this fixation is greatly reduced. Also, micronutrients with the exception of Molybdenum, (Figure 1) are more available with increasing pH. This micronutrient is essential for nodulation and therefore nitrogen fixation in legumes. This figure can be misleading to some degree, but be aware that a pH that is above the recommended ranges is equally harmful as one that is below the recommended range.

Nitrogen availability is also improved by proper liming. Many of the organisms responsible for the conversion of nitrogen sources to plant available sources have a high demand for calcium. When the pH is maintained in the proper range more calcium is available for this process, this is also important for residue breakdown. Nitrogen fixation by legumes is improved with proper pH maintenance. The activity of Rhizobia, the bacteria responsible for nodule formation in legumes, is severely limited in acidic soils.

As you can see there a many benefits of maintaining the proper pH through liming that are both direct and indirect. Due to the region of the world we live in we will constantly be plagued with low pH’s making it essential that we lime in order to maintain high crop production levels. Hopefully the explanations mentioned above have provided enough reasons to for you to answer the question posed in the same manner as I did. Fertilizer prices are high shouldn’t you be spending money on fertilizer instead of lime? Ultimately this is your decision.

Remember that it takes approximately 6 months for most agriculture lime to start having an effect so the sooner you can get it out the sooner you will get the benefit.
This past month we have been blessed with an abundance of rainfall. According to NCDA records the rainfall totals for the month of March in Monroe are 0.25 inches greater than “normal” and the average air temperatures have been 2.6 degrees below normal. These conditions combine to make for some wet field conditions. I know we are all chomping at the bit for the first opportunity to get in the field but proceed with caution. It is no secret that traffic on wet soils leads to compaction. According to published research from Ohio, soil compaction can lead to 13 to 17% reductions in yields when field operations were conducted under ideal conditions with more severe reductions occurring when fields were wet. This compaction can remain in some instances 8 or more years. Planting in wet conditions can lead to sidewall compaction also. This occurs when the openers smear the clay along the side of the furrow leading to less than ideal root conditions for the developing seed. This year when planting if the field is wet you may want to reconsider planting it anyway, yes we are getting behind, but yields may actually be greater by delaying planting until more favorable conditions occur. In order to obtain the best results every effort should be made to avoid planting into cold, wet soils.

The following is an excerpt from the North Carolina Corn Production guide. Remember this year has been cool and wet therefore the normal soil temperatures for this time of year are cooler than in a “normal” year. Pay special attention to the last paragraph if you find yourself in a late planting position.

“Corn should be planted when soil temperatures reach 55°F at a 2 inch depth and the weather forecast shows a good chance of warm temperatures over the next few days. In the tidewater region on organic soils this usually occurs before March 20. In the coastal plain 55°F soil temperatures occur from March 20 to March 25, in the piedmont from March 25 to April 5, and in the mountains from April 5 to April 20. Since soil temperatures are affected by the amount of soil residue and moisture, planting dates for no-till systems will be later than those used for conventional tillage. When using no-till practices, planting dates can be delayed by 3-5 days.

Planting date studies conducted at NCSU have demonstrated that corn yields decrease with late planting. In the coastal plain and piedmont areas, corn yields decrease, on average, one bushel per acre for every day that planting is postponed after April 15. In the tidewater and mountain regions of the state, corn yields start decreasing after May 1. The later dates in the mountains and tidewater regions are due to the capacity of the soils to hold greater amount of water that extends the period during which corn growth occurs without stress. The accepted cutoff date for corn planting in North Carolina is May 10. After this date, it is generally more profitable to plant another crop. The risk of low corn yields increases because pollination will most likely occur during a period of moisture stress.

One way to reduce the risks associated with planting corn late is to switch from full-season hybrids to medium- or early-season hybrids. Best results are found when growers are advised to switch from full-season to medium-season hybrids around April 28, and from medium-season to early-season hybrids around May 7.”
Feature Weed: Palmer Amaranth

Palmer Amaranth is a member of the pigweed family. It is a summer annual that can reach heights of 6 to 6.5 feet. It is distinguished from other pigweed species by its hairless leaves and prominent white veins on the undersides of its leaves. It is also distinguished from other pigweeds by its seed head. (Figure 2) The females plants have spines while the males do not. Another distinguishing factor is that it generally has a petiole connecting it to the main stem that is as long or longer than the leaf. (Figure 3)

Palmer has long been considered the most troublesome weed in cotton production in North Carolina. This significance was lessened with the implementation of Glyphosate tolerant crops. Recently it is regaining this distinction in cotton as well as other crops due to the widespread occurrence of Glyphosate resistant biotypes. Perhaps the most troublesome fact about this weed is that is has already been confirmed to be resistant to multiple herbicide modes of action. These include resistance to triazines such as atrazine, ALS inhibitors, such as Staple, and now finally glyphosate. All three of these resistances occur in North Carolina but not all in this region. It is also feared that without proper stewardship of our PPO inhibiting herbicides this mode of action could be next on the list of resistance.

The best management for this weed if glyphosate resistance is suspected is with preemergence herbicides such as fomesafen, pendimethalin, atrazine, or s-metolachlor just to name a few. The selection all depends on your cropping system. We are especially concerned that we may develop PPO resistance in this weed as well as many other weeds therefore we are encouraging growers to limit PPO inhibitors to one application per year. Some of the herbicides that use this mode of action include Valor, Valor XLT, Aim, Reflex, Flexstar, Resource, Blazer, Envive and Prefix just to name a few. This is not a complete list but includes some of the more popular choices. If you have a question as to whether the mode of action of a product is a PPO inhibitor and cannot find the information on the label, contact your local extension agent. Hopefully this practice will limit the selection pressure put on this mode of action and enable its continued usage.

It is critical that if you think the plant may be resistant that you DO NOT LET IT GO TO SEED! The female plant can produce between 400 to 500,000 seeds per plant. If resistance is suspected please call your local extension agent and let us confirm it.

Turn Rows

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