



Agronomy Notes

Capital Region

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Capital Region Extension Agronomy Team

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Recent Moisture Stress & Ear Formation and Yield Potential

It takes fairly severe stress conditions during the early vegetative growth stages to impact kernel row numbers per ear. Kernel row numbers are usually less affected by environmental conditions than by genetic background. Therefore, in most cornfields, it's unlikely that kernel row numbers have been impacted significantly by recent dry conditions. However, unlike kernel rows per ear, kernels per row can be strongly influenced by environmental conditions. Determination of kernels per row (ear length) is usually complete about one week before silking (R1) or about the V17 stage.

Severe drought stress during the two weeks prior to pollination can reduce kernels per row and lead to a reduction in grain yield.

(Source: Peter Thomison OSU)

Are You Ready for Applying Fungicides for Soybean Rust?!

As this article is being prepared, June 6, all reports of the development of the Soybean Rust in the southern United States are very positive for soybean growers. With many crop professionals looking all over, very few cases of this new disease on soybeans have been identified. Pathologists are noting that weather conditions have not been favorable for the development of this disease.

However, conditions could change very rapidly and all soybean producers should be prepared in case controls will need to be applied in a timely manner.

Most crop producers are very familiar with applying herbicides and insecticides to agronomic crops. The application of fungicides is another matter. Effective control of the soybean rust, if necessary, will depend on placing fungicides as deeply into the crop canopy as possible. This is due to the fact that the disease usually starts in the lowest part of the crop canopy where conditions are more favorable and then rapidly moves upward. As the crop develops a denser canopy, the delivery of fungicides down into the lower portion becomes more challenging.

Ag engineers have noted that simply applying the correct rate of fungicide per acre is not enough to achieve effective rust control. Most fungicides have very little systemic activity. Best controls result from a thorough coverage of the plant to provide a "barrier" to prevent the fungus spores from penetrating leaf surfaces.

Although soybean producers have no experience in controlling soybean rust at this time, work in other countries can provide some guidance. The rule of fungicide application is that good coverage of the plants results in good control. How to get the best coverage is basically done in two ways. First, reduce droplet size and second increase the carrier volume. Ideally, the smaller droplet sizes provide better coverage but too small of droplets (<100 microns) will not have sufficient energy to penetrate far into the crop canopy. Ag engineers are recommending utilizing tips that deliver the majority of the droplets in the small to medium size class, approximately 200-300 microns.

Spray pressures are also important. High pressure (60 to 70 psi) is needed to drive the fungicides down into the lower portion of the canopy. Simply increasing boom pressures but not changing nozzles will result in too small droplet sizes that may tend to drift. Be sure to check with nozzle manufacturers to ensure you have proper nozzles for high pressures that deliver the right size droplets.

Boom height and overlap are two other important factors. If booms are too high, droplets will not have sufficient force to reach their intended target and will be susceptible

to wind drift. If booms are too low then insufficient overlap may result in poor coverage.

Preliminary studies have shown that 10 GPA can provide adequate canopy coverage as long as droplet size and pressures are used. However, as the crop continues to grow and there is more canopy to cover, higher spray volumes will be needed.

I hope rust conditions in the US continue to favor soybean producers and no controls will be needed this year. However as any boy scout will tell you: "Be Prepared!"

Paul H. Craig, CCA
Forages

What's Big in Small Grains Research?

I attended the Small Grains Management Field Day on June 7 at Penn State's research farm at Rock Springs. There are several projects under study so I thought I'd fill you in on my observations.

Wheat Variety Testing

In the 2004-2005 variety test, there are sixty four varieties entered, up from fifty two in 03-04. MV8-29 (Univ. of MD), which was one of the top varieties last year, has been released and is named Choptank.

Hard red wheat varieties are also being tested. This year twelve hard reds are being tested, along with twelve soft reds and 1 soft white variety. Last year, thirteen hard reds averaged 61 bu/ac., 55lb. test weight and eleven soft reds averaged 74 bu/ac. with 57 lb. test weight. A representative from one of the seed companies was there and said that hard red wheat varieties tend to tiller less and recommended a seeding rate of 120-150lb. per acre.

Grain Quality

The hard reds averaged one half percent higher protein than the soft reds. They pointed out that two of the soft red varieties, Rachel and Tribute, had gluten strength levels comparable to the hard red group. These were also two of the higher yielding varieties in that particular test.

Koushik Seetharaman, a Penn State food scientist discussed qualities of wheat that matters to flour mills. These millers buy grain based on protein content but should really be buying on type of protein (peptides) in it. Some varieties have lower total protein but have the qualities that make flour better for certain types of products.

A management study of hard red wheat is in its third year. Various treatments of nitrogen timings, sulfur, growth regulator and fungicide use are being evaluated for the effect on not only yield but protein content.

Barley Tests

Hulless varieties are being tested with conventional barley. One of the main reasons for interest in hulless varieties is its potential for use as a feedstuff for ethanol

production. Because of the lower energy inputs for barley compared to corn, such as less nitrogen use and usually no drying, USDA scientists calculate that hulless barley will produce energy more efficiently than corn. If it could find its way into the ethanol market, it could breathe new life into barley production. This would make double cropping with soybeans a better system than after wheat. Incidentally, the test weight used for hulless barley is 56 lbs. per bushel.

Disease Studies

Last year, researchers found DON (vomitoxin) in wheat samples that did not have typical signs of head scab. They are trying to determine if this is occurring under any particular set of weather conditions. In another test, they are screening numerous wheat varieties from breeders in several states across the country for leaf spot diseases to see which ones merit further testing in PA. Truman wheat, not surprisingly from Missouri, and included in this test, is reported to resist head scab well. This will be tested more extensively in PA this coming year.

The following link will take you to Penn State Crop and Soil Sciences page for small grains.
<http://smallgrains.psu.edu> . Check there in late July for the results of the latest variety tests.

John Rowehl, CCA
Grain Crops

July Tips to Maximize Crop Insurance Protection

Acreage Reporting DEADLINE: Producers are required to file acreage reports with **both** their crop insurance agent (by 7/15 for most spring crops) and their county FSA office. If there are differences between the two reports, a written explanation is required because the law requires USDA to do a computerized comparison of the reports. Be careful to assure that the reports are accurate including planted and prevented planting acreage for each farm because this will set your amount of protection for 2005 (most surprises at the time of loss claims result from reporting errors). For late planted acreage, report the planting completion date by field as it impacts the amount of your protection.

Retain a copy the signed acreage report. A Summary of Protection or Schedule of Insurance will arrive in 4 to 8 weeks after your acreage report is filed. Compare the information with your filed acreage report to assure that the information agrees. Notify your insurance agent immediately of any discrepancies.

Damaged Small Grain: There are reports of weather caused diseases/toxins in small grain. About 2,500 small grain crop insurance policies are in effect in PA and provide some protection against poor grain quality. If you determine that your insured grain may have quality damage, contact your crop insurance agent before you begin to harvest (or upon discovery) and ask to talk to a crop loss adjuster to determine how to proceed to obtain maximum policy benefits. If your insured grain has poor

quality, the insurance company may require, **two tests**, a quality determination by a Federal Grain Inspection Service (FGIS/USDA) laboratory **of both** a grain grade and toxin content (i.e. vomitoxin PPM). Be sure to request **both tests** in communications with FGIS if you suspect vomitoxin or other toxins (in the past some affected producers got only one of the tests and forfeited part of the loss payment).

Reporting Requirements if a Loss is Anticipated:

The insurance policies require that **written notice be given to your crop insurance agent** (by crop by farm):

- Within 72 hours of discovery of damage or loss,
- 15 days before harvest begins, and
- Within 15 days after harvesting is completed but not later than 10/31 for small grains.

Forage Seeding Protection Expanded Statewide for 2006:

Forage seeding protection has been expanded to all PA counties except Philadelphia. This policy provides protection of a good stand if one is **NOT** realized because of bad weather. Coverage is available of up to \$168 /acre on seedings where at least 50% of the seed by weight is alfalfa, clover, birdsfoot trefoil, or other locally recognized forage legume species. The fall seeding deadline is 8/31/05. **See a crop insurance agent for details before the 7/31 enrollment deadline.**

PA Premium Discount on 2005 Bills and

Protection Summaries: You'll notice an 8% premium discount on your 2005 statements that is calculated before federal premium subsidy is applied. This is the Commonwealth's way of saying thanks for enrolling and a contribution to help to make the higher better performing coverages more affordable and...to help you better manage your risk exposures. It's another benefit of farming in PA!



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Your Corn Nitrogen Report Card – How Did You Do?

Late Season Cornstalk Nitrate Test

Nitrogen (N) management is one of the most challenging areas in corn production because of the many factors that influence N availability including: form of N applied, timing of application, impact of weather, etc. This is especially true when manure is part of the system. Standard N recommendations take into account many of these variables and early in-season tests such as the Pre-sidedress Soil Nitrate Test (PSNT) and Chlorophyll Meter test are very helpful in reducing the uncertainty in N recommendations. While this uncertainty can never be completely eliminated, it can be minimized. A key to improving N management over time is having reliable feedback on how well your N management program is working. While good yields and dark green plants are clear indicators of adequate N, they do not tell you if you have too much N, which can especially be a problem for fields to which manure has been applied. Similarly, visual

symptoms of N deficiency may be observed late in the season, but they are not always associated with decreased crop yields.

The Late Season Cornstalk Nitrate Test has been demonstrated to be a reliable end-of-season indicator of crop N status based on research performed throughout PA, as well as other states. It provides a good assessment of whether the crop had the right amount of N or too much N or whether it ran out of gas. This information combined with records of N management can be very useful for making future management decisions. **While you could test all fields, testing a few representative fields will probably be adequate to provide a good assessment of your N program.**

To perform this test, print the submission form and sampling instructions from the web site: http://www.aasl.psu.edu/Corn_stalk_nitrate.html Sampling instructions should be followed carefully. Send the completed submission form and samples with payment to the Agricultural Analytical Services Laboratory.

▶ Cornstalk Nitrate Test \$10.00

Late Season Cornstalk Nitrate Test Interpretation

Nitrogen Deficiency Symptoms – The visual symptom of N deficiency on a corn leaf is a yellowing (eventually the area will die and turn brown) beginning at the tip of the leaf and going back the midrib in an inverted “V” shape. The symptoms will show up on the bottom leaves of the plant and as the deficiency becomes more severe leaves higher up on the plant will show the same yellow, inverted “V” shaped symptom. Late Season Cornstalk Nitrate Tests results are reported in Nitrate-N parts per million (ppm).

LOW (Nitrate-N result is less than 700 ppm) Nitrogen likely limited yield. Nitrogen management should be evaluated to determine why the N supply was inadequate and management changed accordingly. There is a good probability that there would have been a profitable response to more N in this field. Corn probably was showing N deficiency symptoms. As the test approaches the optimal range, the likelihood of seeing a deficiency goes down.

OPTIMAL (700-2000 ppm) Nitrogen was adequate but not excessive for optimum economic yields in this field. Fields testing in this range are an indication of good N management. A goal of N management should be to consistently have your fields in the optimal range. However, even under ideal N management, it may not be possible to be in the optimal range every year but the long term trend in test levels should be close to the optimal range. There may be some yellowing on the lower leaves before the corn reaches maturity.

EXCESSIVE (greater than 2000 ppm) Nitrogen in the field was in excess of what is needed for optimum economic yields. Not only might this represent an

economic loss, but it may indicate a potential for N loss to the environment. Nitrogen management should be evaluated to determine why the N supply was excessive and management changed accordingly. Corn grown on fields in this category will probably not show any yellowing in the lower leaves until the leaves start to naturally die off.

Agricultural Analytical Services Laboratory Penn State

Dauphin County No-Till Field Day

A no-till field day will be held on Wednesday, July 27, 2005 from 8:30 am until 2:30 pm in Upper Dauphin County. The field day will highlight soil compaction, transitioning from conventional tillage to no-till crop production and the management of manure in a no-till

farming system. The event will include field demonstrations of deep tillage equipment, manure spreading, secondary tillage tools for no-till and soil quality indicators. The program will be held on the farm of Homer Campbell, Berrysburg, near the intersection of Rts. 25 and 225.

The Dauphin County Conservation District is providing lunch to those individuals who preregister by calling 717-921-8100 before Monday, July 18. Additional information is available by calling Dauphin Cooperative Extension 717-921-8803 or the Dauphin County Conservation District.

Calendar of State-wide Events

- Weed and Other Pests Field Day, July 12, Agronomy Research Farm, Rock Springs (Call your county Extension office for registration details)
- Certified Crop Advisor Workshop - PLEASE NOTE DATE and LOCATION CHANGE July 18, 504 ASI Bldg., University Park Campus
- Dauphin County No-till Field Day, Homer Campbell Farm, Berrysburg
- Penn State's Ag Progress Days, August 16-18, Rock Springs
- Field Diagnostic Clinics, September 13 and 15, Agronomy Research Farm, Rock Springs

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