

Agronomy Notes

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Capital Region Extension Agronomy Team

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Cornstalk Testing to Evaluate Nitrogen Management

Of all the inexact sciences in crop farming, nitrogen fertilization is inexact as they come, especially when managing fields on which manure is applied. But whatever decisions were made, you can give your corn a check-up to tell if the right amount of nitrogen was used. This can be done by measuring nitrate concentrations in the lower portion of cornstalks at the end of the growing season. The test is called the “end-of-season cornstalk test”. It can be used to evaluate N management practices used in any field of any year.

Corn plants suffering from inadequate N availability remove N from the lower cornstalks and leaves during the grain-filling period. Corn plants having more N than needed accumulate nitrate in their lower stalks at the end of the season. Field research has established what concentration of nitrate in the stalk is low, high or just right for optimum corn yields.

All corn producers should consider using the test on a few fields each year. Those who learn that their fields usually test in the optimal range need not make larger investments in time or money. Those who learn that they usually apply too much or too little N to some or all of their fields will find it profitable to adjust rates of application.

Stalk sampling can be done anytime between about the 1/4 milk line stage of the grain and up to 3 weeks after the grain forms a black layer. For fields taken for silage, this would be done just before harvest (often about 1/2 milk line stage).

Areas differing in soil types or management histories should be sampled separately. Stalks severely damaged by disease or insects should not be used.

The portion of each plant sampled is the 8-inch segment of stalk found between 6 and 14 inches above the soil. Remove leaf sheaths. Ten plants would be a good sample size for a field. Cut each of your stalk sections into approximately two inch long segments before you send them to the lab. If possible, dry the samples immediately or send them to the lab as soon as possible after collection. If there is more than a day between sampling and sending, store sample in paper bags and refrigerate (don't freeze).

To prevent molding, do not store samples in a plastic bag or other non-breathable container for an extended period of time. Package the sample(s) in a cardboard box. Send the sample, completed submission form and payment of \$10 per sample to:

Agricultural Analytical Services Laboratory
Tower Road
University Park, PA 16802
Make check payable to: Penn State University

Interpretation of Nitrate Concentrations

- **Low** < 700 ppm - Nitrogen likely limited yield and management should be evaluated to determine why it was inadequate.
- **Optimal** 700 – 2000 ppm - Nitrogen was adequate but not excessive for optimum economic yields in this field.
- **Excessive** > 2000 ppm - Nitrogen in the field was in excess of what is needed for optimum economic yields. You should determine why the N supply was excessive.



More often than not, results of these tests show that there are plenty of fields out there that have room for improvement. When it comes to nitrogen management, we can do better. The end of season stalk nitrate test is a tool you can use. You should not make radical changes based on the result of just a few tests in one year. Thoughtful use of the test for a few years should help make nitrogen management better; a little less inexact anyway.

John Rowehl, CCA
Grain Crops-Cumberland Co.

BETTER CROPS AND PROFITABILITY

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Late Summer Considerations

As summer proceeds, many unwanted perennial weeds and crops are reaching a stage in their life cycle when they are most susceptible to mowing or herbicide applications. **Now is the time to control them!**

Many effective herbicides on the market will effectively control perennial weeds, if applied when the weeds are at bud to bloom stage. In many areas of the region, this occurs in late August and into September.

The window for mowing or herbicide application in the fall is long. In fact, effectiveness of herbicides can last until the first killing frost. Dicamba (Banvel/Clarity), clopyralid (Stinger), aminopyralid (Milestone), triclopyr (Garlon), metsulfuron (Cimarron), 2,4-D, diflufenzopyr (Distinct/Status/Overdrive) and glyphosate (Round Up and many others) are the key active ingredients utilized to manage weeds like hemp dogbane, thistles, tree of heaven, and numerous other perennials.

In addition, the killing off of sod and alfalfa fields in late summer or early fall sets the stage for easy no-till operations in the spring. Also, after corn silks are brown, opportunities are open to apply herbicides such as 2,4-D with a high boy to eliminate escaped perennials. This practice is effective without causing crop injury.

Don't forget seed sources that are located away from fields. Sources are usually hidden on the farm and hide out near manure storage structures, pastures, fence rows, etc. Managing these seed sources can lessen or eliminate the spread into cultivated fields before a problem occurs. This is also true of annuals. With some species capable of producing 100,000 seeds per plant, it makes perfect sense to prevent them to setting seeds.

August is also a good time to kill existing vegetation and overseed with desirable perennial species to cover the soil. Hard to manage areas may benefit from tactics like those used by the Department of Transportation, in which an application of glyphosate is done at the same time as the overseeding of short statured, low maintenance grasses such as hard fescue. This is ideal under high tensile fences where tall grasses interfere or on banks and around the farmstead where a mower cannot reach.

The removal of unwanted plants must be followed by a program to establish desirable plants or the application of herbicides will become a yearly program, cause dependence on herbicides and possibly lead to resistant populations.

Finally, assess that alfalfa stand now! Determine the

number of stems or plants per foot and make a decision now to best manage the stand. Less than 4 plants or 40 stems per foot indicates that now is the time to plan on killing the stand in preparation for the following corn crop. Some growers had difficulty in the spring eliminating alfalfa regrowth in corn. Fall applications are much more successful than spring.

By acting now, future problems can be avoided and the effects of weeds can be diminished or eliminated.

**Del Voight, CCA
IPM – Lebanon Co.**

Maximize Crop Insurance Policy Benefits

Double-Check Acreage Report and Summary

A "Summary of Protection" or "Schedule of Insurance" is received a few weeks after your reported acreage information is filed with your crop insurance. This form reflects the insurance company's record of your insurance protection for 2007 spring crops. **It's a good rule of thumb** to compare the Summary to your completed acreage report to make sure that the information you reported was interpreted and transferred correctly. Contact your insurance agent immediately with any discrepancies, otherwise they could adversely affect your premium bill and/or claim payment.

Crop Damage Reporting Requirements

(if a loss is anticipated) The insurance policies require that **written notice be given to your crop insurance agent** (by crop by unit (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 12/10 for grain corn and soybeans.
- **Don't destroy evidence of damage until a loss adjuster evaluates it!**

****Authorization is Required to Leave Sample**

Rows for Yield Determination: If loss adjusting workload does not permit appraising damaged crop acreage before you are ready to start cutting silage, the policy requires that loss adjusters select sample row areas for later yield determination and provide you written authority to leave such areas that they designated as sample rows. For this reason, it's important that notice of damage be filed with your agent crop as early as you determine that damage occurred so that harvesting is not delayed.

Cutting Damaged Corn for Silage: If you plan to cut damaged grain type corn for silage, it's important that the grain content be determined before harvesting,

regardless of whether you insure on a tonnage or grain yield basis. If you insured on a grain basis (i.e. with CRC) a loss is determined by comparing the revenue guarantee to the appraised yield times the October CBOT average price for the December contract. If you insured on a tonnage basis, the grain content is the basis for quality adjustment of the silage tonnage.

Additional details on reporting crop damage are available from authorized crop insurance agents.



Eugene Gantz
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Summer Establishment of Forage Crops

Forage producers typically refer to the two establishment periods for forage crops as spring and fall. Actually, the second period is mid to late summer rather than fall. Many forage growers actually prefer late summer seedings primarily due to reduced insect and weed pressures. Usually, summer seeding of forages is into small grain stubble fields or fields where a spring establishment has failed.

Most alfalfa growers are aware of the allelopathic effect of old alfalfa stands on a new seeding. Research has found that old alfalfa crowns and roots exude a toxin that inhibits the germination and development of new seedings. This is one reason why alfalfa producers rotate their stands for at least one growing season prior to a new seeding.

Another reason for rotating is the buildup of alfalfa diseases in older stands and the opportunity to utilize the nitrogen produced by the alfalfa crop by a succeeding corn crop in a rotation. However, the short interval from spring to mid summer and the fact that the stand is considered a failure allows for a summer seeding to remedy a failed stand.

There are risks associated with summer seedings. The primary concern is moisture stress during germination and seedling development. Avoid seeding when soil moisture levels are low in the upper 3-6 inches. Watch short term weather forecasts and be prepared. No-till establishment will minimize soil moisture losses.

Early to mid-August is the preferred time to sow alfalfa in south-central PA to ensure optimum establishment and production next spring. However, later seedings do occur with some stands sown as late as mid September. Recent work at Penn State University by forage specialist, Dr. Marvin Hall, has taken a look at optimum summer seeding dates.

Dr. Hall's work has shown that delays in forage seeding result in a reduction in plant height in late

November. This will cause a reduction in plant vigor and lower DM yields the next growing season. He concluded that delaying planting by 2 weeks after August 1 can result in a loss in production the following year of approximately 0.5 ton/acre. By planting 4 weeks later (Sept. 1), the yield reduction was 1 ton/acre the following production year.

Dr. Hall also compared summer planting dates for three grass species including Orchardgrass, Ryegrass and Reed Canarygrass. His results with grasses indicate that late August seedings are preferred for orchardgrass and ryegrasses. However, reed canarygrass yields were higher with the earliest seeding dates and planting canarygrass after September 5 resulted in poor plant vigor and lower DM yields the following spring.

In summary, planting forage crops during August is preferred across south central PA. They can survive through the winter if planted a few weeks later, but delayed planting will result in a reduction in plant vigor and lower yields. Planting after late September can result in severely injured stands next spring.

Paul H. Craig, CCA
Forages - Dauphin Co.

Crops to Keep the Soil Covered

We are now to the part of the growing season (mid-summer) when we need to plan a cover crop strategy for next year. This is a very important part of all cropping systems and especially so in no-till farming.

Let's focus on cover crop management and the benefits of cover crops in no-till systems. Keep in mind however, that cover crops are very important in mulch tillage and other tillage systems as well.

Residue Processing

The use of a no-till drill for planting cover crops aids in "processing" previous cover crop residues. The cutting and grinding will improve field plantability the following spring. Stalks are put in contact with soil while maintaining anchoring by previous crop residue. This helps prevent over land movement of the residue by wind and/or water flow.

Maintaining Living Roots in the Soil

As the previous crop (usually an annual) dies, its roots begin to decay, altering the bio-activity of the soil. By planting a cover crop, we introduce a new set of living roots. Remember that in the native setting, our soils had living roots present all year, every year. Living roots help build soil structure which will support significant weight before "collapsing into compaction".

Grow Fertilizer

Cover crops capture crop nutrients and hold them in plant available forms. Grass family cover crops can capture and hold significant amounts of nitrogen that could otherwise leach away during winter months. Legume family cover crops can, when properly inoculated, fix a significant amount of atmospheric nitrogen if grown long enough for ample accumulation. This may require delayed termination (burndown) in the spring to allow time for the accumulation of desired nitrogen levels. Crops are mostly carbon, which is the main ingredient in organic matter. If you were to analyze a yield map of a field, almost without exception, the highest yielding areas have the highest organic matter content. **Grow cover crops to grow your yields.**

Provide Forage

When planted early, cover crops can provide additional on-farm forage in the fall and/or the following spring. Some livestock operators are planting a mixture of spring oats and cereal rye in late summer. This can provide a mid to late fall forage crop of spring oats, which will winter kill, leaving cereal rye as a spring forage crop.

It is not just livestock that benefits from the forage produced by over crops. Earthworms and in particular, night crawlers, require large amounts of forage if we wish to grow and maintain high earthworm populations in our soil. Earthworms and night crawlers process crop and cover crop residue into a very high grade fertilizer which enhances the fertility of our soils.

Let's work at keeping soil "out of sight" just as it is in its natural setting. This will maximize the soils bioactivity.

**H. Grant Troop, CPAg/CCA
Capital Region No-till Agronomist**



Dates to Remember

Ag Progress Days: August 14th thru 16th
Don't miss the premier Ag event of the summer!

PA Soybean Yield Contest: Deadline is August 31st. Submit your Name, Address, & Phone to:

John Yocum
1056 Old Reading Rd.
Catawissa, PA 17820

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