SCNY Dairy & Field Crops Digest

Nitrogen on corn fields- is it still there?

–Tom Kilcer, Crop Soil News-Advanced Ag Systems. June 2013.

Late May and most of June has had a tremendous amount of water through the soil. What about the nitrogen? For first year corn on sod (rotation pays again!) and heavily manured fields (daily spread), the slow steady re-lease from organic matter throughout the season reduces the nitrogen losses. Leaching has taken place but only from the little that turned to nitrate. The majority is still available for release this season. For really soggy fields, 50 lbs of N sidedressed as soon as the field is dry, will help carry the crop until organic N release can catch up again. Anaerobic soils will build up compounds in the corn that inhibit photosynthesis. It will take up to two weeks to remove these from the plant.

For the farms that put additional nitrogen (other than the 30 lbs in the band) on as urea or especially as solution (both fast release) at planting time, the losses are significant. They could also be significant for farms that spread liquid manure and immediately incorporated it to capture the ammonia nitrogen. This volatile fraction quickly changes to nitrate (just like urea) in warm soils and so is also subject to high losses from excessive moisture in late May and in June. In a well-drained soil it quickly leaches the nitrate out or below the root zone. For less than well drained (especially those with standing water) it only takes a couple of days of wet conditions to denitrify the nitrate. Denitrification is when the nitrogen is converted back to nitrogen gas, which is unusable by the plant, and is released into the atmosphere. On well drained soils, you could have **lost 50 lbs or 40% of the total early applied nitrogen**. **On a somewhat poorly drained soil 60% of the total applied N** could have been lost. **The bottom line is that the corn that received all the N at planting time may need to be sidedressed.**

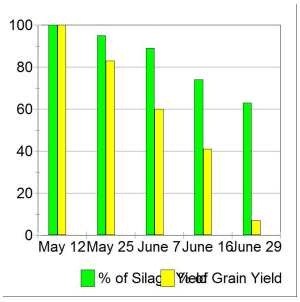
"The spring this year has been cold. Nitrification and denitrification are slow in cold soils, which will decrease potential for loss of applied N. But cold temperatures will not slow leaching of nitrate present in the soil. With slow conversion of ammonium to nitrate, there should be less loss of applied N.

The nitrate component of UAN solution (28 or 32 percent N) is immediately subject to loss, and the nitrification rate of urea and ammonium in UAN will be more rapid than anhydrous ammonia. Therefore, loss potential is greater with such applications.

When warm, wet soils provide a good environment for microbial mineralization, the conversion of organic N to ammonium. Ammonium will accumulate under anaerobic conditions."

-John Sawyer, Dept. of Agronomy, Iowa State University. Extension and Outreach

Corn Silage after June 15?



As the graph shows, by June 15, there is **little grain produced** in corn silage. Grain that is produced will be wet, potentially setting marginal rations up for bouts **of acidosis, feet problems, low production**, and abuse of nutritionists. There is a potential window if you harvest before a killing frost, when sugars are high. A homolactic bacteria could rapidly ferment it for proper ensiling. You are harvesting nearly all stover. The digestibility of that forage becomes critical. At this point, the best switch is to **high forage yielding Brown Mid Rib Sudan-sorghum**. It will give you the same or more yield/acre than corn but because it is mowed and dried, you can control wetness. More importantly, harvested correctly, it will give you more milk/acre and more digestible forage than any other crop. **Research at Miner Institute found that cows will milk on BMR Sudan-sorghum the same as good corn silage**, and produce higher rumen pH and higher components. For further research and farm information go to: http://nmsp.cals.cornell.edu/publications/factsheets/factsheet14.pdf (Note: BMR is NOT an option for planting and forgetting it. It will grow 3 inches a DAY and quickly get to tall for manageable harvest.) Most farmers mow **when the tallest leaf is at 3 feet** (slightly less than a meter). It is best mowed with intermeshing rollers (tine conditioners are useless) and wide swathed. It is critical that it is round bale wrapped or **ensiled the same day you mow it.**

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JUNE/JULY 2013

Cornell Cooperative Extension South Central NY Dairy & Field Crops Program

Financial Message from the Director of Extension

In a time of much uncertainty, I wanted to take the opportunity to bring you all up to date with CCE's fiscal situation as we approach the end of June, 2013. The federal funds that help support our County offices, extension staff on the Cornell campus, statewide and regional extension programs, and extension faculty efforts were cut by 8.5% during the 2013 federal fiscal year due to the sequestration process. This cut is impacting our ability to maintain the critical linkages between extension programs in the field and faculty support and involvement on the Cornell campus. Both of our major nutrition education programs, the Expanded Food and Nutrition Program (EFNEP) and the Eat Smart New York program, have suffered significant budget cuts at the federal level, resulting in reductions to staffing in some areas and a loss of the programming in other areas. Furthermore, if a budget agreement is not realized in Washington and the sequestration process continues for another year, we will be facing a 17% cut for the 2014 federal fiscal year that begins on October 1, 2013. If the 2014 sequestration cut occurs it will necessitate additional reductions of support to all levels of the system. During these challenging times, it is important to remember that Cornell Cooperative Extension survived the Great Depression and several recessions, and we will emerge from the current challenges as well – resilience is in our DNA.

At the county level, funding for CCE for 2013 has remained relatively flat overall, although a few Associations experienced slight to moderate increases and a number of Associations experienced small decreases. Level funding overall at the County level is an improvement over the last three years, during which time the system lost approximately 6 million dollars in total in County appropriations.

I want you to know that I am working diligently and strategically with the leadership team at Cornell to reduce expenditures and identify new revenue sources to address these budget challenges. The vision outlined in our 2013-17 Strategic Plan is guiding our decision making process. The efforts made at the local level by our staff, volunteers and program participants to communicate the value of extension programs to elected officials is the backbone of our resilience and leaves me feeling highly confident that we will weather the current challenges in good shape.

On behalf of Cornell University I thank all of you – staff, participants, volunteers, government officials - for your support and participation as we extend the resources of Cornell University across the State. I appreciate the work that all of you are doing on behalf of CCE. Together we will continue to make the case for the value of extension programs and seek new partners who can help us fulfill our educational mission on behalf of all New Yorkers.

Helene R. Dillard, Ph.D.
Director, Cornell Cooperative Extension
Associate Dean, College of Agriculture and Life Sciences and College of Human Ecology
Professor, Plant Pathology and Plant-Microbe Biology

We are pleased to provide you with this information as part of the Cooperative Extension Dairy and Field Crops Program serving Broome, Cortland, Tioga and Tompkins Counties. **Anytime we may be of assistance to you, please do not hesitate to call or visit our office.**

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Diagnosing Soil Compaction

Sjoerd Duiker, Associate Professor of Soil Management and Applied Soil Physics

Soil compaction diagnosis is not as straightforward as it seems, especially because we lack good tools to do a quick test.

The standard tool is the penetrometer, or soil compaction tester. It has a pressure gauge, a solid rod and a standard tip (usually of 0.5 inch diameter at the top). It has to be pressed into the soil at approximately 1 inch per second when soil is at field capacity (a day or two after soil profile is completely soaked). Measuring at field capacity is necessary because penetration resistance will increase when soil dries out. Root growth, however, will resume once the soils wets back up. The gauge tells you if you reach 'root limiting' compaction.

The tool was developed in completely pulverized soil packed to different densities. Seedlings were grown in these soils and it was found that roots did not penetrate soil if the penetration resistance exceeded 300 psi, and were starting to be inhibited when penetration resistance exceeded 200 psi. In tillage literature you will find that if penetration resistance is less than 100 psi seed-to-soil contact is likely to be poor due to excessive air pockets (so soil that has been plowed has to be packed to 100 psi to get good seed-to-soil contact, that is why we use rollers and packers).

In conclusion, penetration resistance should be between 100 and 200 psi. More information on the use of the penetrometer is found in Agronomy Facts 63 available from Penn State Extension.

While the penetrometer can give you a first assessment, it is not advisable to base your conclusion solely on it. This is especially the case in soil that has not been tilled. In long-term no-till, sod or forest soil the penetration resistance may exceed 300 psi and yet there may not be a compaction problem. The reason is that in these soils firm aggregates are surrounded by a network of pores that allow root growth, aeration, and water percolation to take place. So in addition to using the penetrometer, you need a shovel and dig to a depth of 12-18 inches to assess soil structure.

You need to determine if the soil is massive or crumb. If the clods fall apart easily or are held together by dense root networks that is a first sign compaction may not be problematic. Look for severe platy structure in the surface soil. Then you need to search for evidence of root growth restrictions. Look where there is living vegetation in the field (for example, weeds or cover crop), and determine if root growth is limited - in compacted soil roots typically follow cracks without being able to grow into the massive clods, or the roots crowd in the horizontal voids between massive plates.

Do you see evidence of shiny surfaces created by tillage tools working in wet soil? If there is a hard pan, roots may make an abrupt turn or many fine roots crowd above this layer. If roots grow downward without a problem, compaction is not likely to be severe. Also look for organic matter content - does the soil show evidence of organic matter accumulations, which lead to soil becoming better aggregated and crumb? Finally, look for biological activity, such as earthworms.

At the surface of the soil, you can look for middens underneath each burrow there is a 4-5 foot deep open nightcrawler channel so if you have many middens, there is not likely to be a compaction issue. Other worms dwell in the surface of the soil and fill their channels with casts as they go. If you have many earthworms that is more evidence that compaction is not problematic. Good times to look for earthworm activity is in spring and fall when the soil is moist.

Presentation Topics

- Corn and Soybean Planting Date x Seeding Depth Studies
- Foliar Fungicides: Tools for Corn and Soybean Production in NY
- Western Bean Cutworm and other Field Crop Pests of 2013
- Soil Health, Adapt-N and Cover Crop Interseeding for Adaptation and Resilience
- Establishing Cool Season Forage Grasses in Roundup Ready Alfalfa
- Organic Cropping Systems Grain Trial
- Corn Breeding and Variety Testing for New York State
- Nutrient Management Update

Registration at 9:00 with Coffee and Donuts (no pre-registration). FREE Lunch will be available at 12:00 noon
Questions: Please call (607-255-2177) or email Mary McKellar (mem40@cornell.edu).

NYS Pesticide Applicator Recertification Credits will be available. Northeast Certified Crop Advisor Continuing Education Credits. Nutrient Management: 1.0/Integrated Pest Management: 1.5/Crop Management: 1.5.

Pests to Keep in Mind: Black Cutworm, Potato Leafhoppers, and Slugs

John Tooker, Extension Specialist

Monitoring networks and field observations around the state help fine-tune scouting activities.

Growers should stay alert for black cutworm damage. Penn State's **Black Cutworm Monitoring Network** detected five "significant flights" and the entire state has since exceeded the 300 degree-day threshold telling us that cutting damage should be evident. We found cutting damage here in Centre County at the end of last week. Remember to scout even if you use transgenic varieties targeting black cutworm and insecticide-treated seed—cutworms have been known to feed right through some of these technologies—well-timed scouting and spot rescue treatments are usually the most economical strategy for managing black cutworm. For more details on black cutworm, its biology and management options see our fact sheet.

Potato leafhopper populations are active in alfalfa fields across the fields. Hot dry temperatures can really speed develop of this pest, so the recent cooler weather and rain will help slow them down. Nevertheless, be aware that they have arrived and some folks have reported populations that exceed economic thresholds. With the higher value of hay, our forage specialist has calculated new economic thresholds in our revised fact sheet.

With the return of some wet weather, **slugs** have an opportunity to become problematic. These slimy mollusks can quickly decimate newly sprouted fields, so be sure to scout low-lying fields or those with heavy residue. Corn seedlings often can grow out of seemingly serious damage, but soybeans are at a great risk because their growing tip is above ground and can easily be killed. If the upper leaves are more or less free of damage, chances of the corn growing out of it are pretty good. If rescue treatments are warranted, act quickly. ✂

Value of Baler Preservative Applicators

Andrew Frankenfield, Agricultural Educator

Preservative applicators likely worth the effort and expense to save the harvest.

Anyone that bales dry hay has had to chase a field of hay in before the rain comes. This happened last week to many people in my area. Many times the hay is almost fit to bale but it is a little tough and you bale it and hope it doesn't mold. These are the times you think, if I only had a preservative applicator on the baler I could bale this and shouldn't have any problems. Then you think, they are too expensive for me I only bale a couple thousand small square bales a year. Think again!

Hay Stem Moisture	Small Square and Round Baler Application Rate	Application Cost per Ton based on ($1.44/lb)
22% and under	4 lbs/ton	$5.76
23% - 26%	8 lbs/ton	$11.52
27% - 30%	16 lbs/ton	$23.04
Above 30%	DO NOTE BALE	
Hay Stem Moisture	Large Square Baler Application Rate	Application Cost Per Ton based on ($1.39/lb)
22% and under	6 lbs/ton	$8.34
23% - 26%	10 lbs/ton	$13.90
27% - 30%	DO NOTE BALE	
Above 30%	DO NOTE BALE	

You can buy a basic 25 gallon baler liquid applicator for less than $400. It is not complicated; it is a small electric sprayer that you mount on the baler. The next thing you would probably want is a baler mounted moisture tester so you can see the moisture of the hay as you bale. They can be purchased for $350-$500. So for about $800 you can outfit your baler with the ability to apply a hay preservative when conditions are not perfect for baling, but be able to get the hay off the field before the rain destroys the quality.

Of course if you want all the bells and whistles you can spend a few thousand dollars or more to get fully automatic controls. These systems have a monitor that regulates the flow of the preservative depending on the moisture content of the hay also the applicator turns off and on when hay is flowing thru the baler pick up with the use of an electric eye. The choice is yours. But think of the value of 5 acres of hay that you don't get baled due to rain. That could have been worth $2,500 ($250 a ton x 2 tons per acre x 5 acres), now it is only worth maybe $125 a ton and valued at $1,250. That $1,250 lost could have paid for the applicator, moisture tester and preservative and you would still have money left in your pocket.

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How much will it cost to apply the preservative to small square bales?
You can buy various types of preservatives in multiple unit sizes. One product for example, if you buy a 50 gallon drum (450 pounds) it costs about $650 or $1.44 per pound. If you buy a 200 gallon tote (1,800 pounds) it costs about $2,500 or $1.39 per pound.

How do you calculate how much preservative to apply?
It is like calibrating a sprayer, but instead of gallons per acre you need to calculate pounds per ton. First you need to figure out how many tons per hour of hay you bale. Count the number of small square bales you make in three minutes. Let's say it is 15 bales. Then weigh several of those bales to get an average weight. Let's say they are 45 pounds.

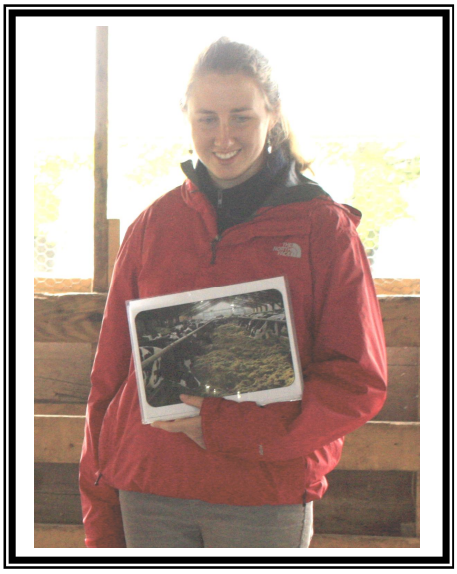
If you bale 15 bales in 3 minutes then in an hour of continuous baling you will bale 300 bales with an average weight of 45 pounds. 45 x 300 = 13,500 pounds per hour or 6.75 tons/hour. If you are trying to apply 4 pounds of preservative per ton you will need (6.75 x 4) 27 pounds per hour. If the preservative weighs 9 pounds per gallon that is 3 gallons per hour (27/9=3) or 0.05 gallons per minute (3/60=0.05). Since the applicator has 2 spray tips you want to get a tip that applies 0.025 gallons per minute since you will be using 2 tips at the pickup head of the baler.

Remember to take into account the specific gravity since the preservative is slightly heavier than water. In my example the specific gravity factor is 1.06 (0.0025 x 1.06=0.027 gallons per minute). I would recommend having another pair of tips that applies 0.05 gallons per minute each so you can put them in if the hay moisture is above 22% and you need to double your preservative rate to 8 pounds per ton.

Calculating Preservative Tips for Small Square Baler	Example	Your Numbers
Number of small bales in 3 minutes	15	
Average Bale Weight	45	
Tons Per Hour (Bales in 3 minutes X 20 X Bale Weight/2000) (3 X 20 X 45 / 2000 = 6.75)	6.75	
Desire Preservation Rate (#/ton)	4	
Pounds of Preservative per Hour (Preservative Rate X Tons per Hour) (4 X 6.75 = 27)	27	
Gallons of Preservative per Hour (Pounds of Preservative per Hour / weight of 1 gallon of Preservative) (27 / 9 = 3)	3	
Flow Rate of Preservative in Gallons per Minute (Gallons of Preservative per Hour / 60) (3 / 60 = 0.05)	0.05	
Flow Rate per Nozzle (Gallons per minute / number of tips) (0.05 / 2 = 0.025)	0.025	
Adjust for Specific Gravity (Gallons per minute X specific gravity factor) (0.025 X 1.06 = 0.027	0.027	
Flow Rate Needed per Tip	0.027	

I know it is more money to spend, but it may be an investment that pays for itself the first year you install it on the baler. This is something you could do this week, since it doesn't look like hay making weather!

Elizabeth co-managed the student-run organic farm, Dilmun Hill while studying plant sciences and horticulture at Cornell. She graduated last spring, and spent several months after that traveling around the US working on small farms. Elizabeth recently moved to Cortland to work part time for Main Street Farms in Homer and Cortland, as well as to serve as Fay Benson's intern in the South Central NY Dairy and Field Crops Team. She will be working collecting data from farms which are in a grant from the USDA. She brings lots of enthusiasm to the team plus lots of needed organization. Liz looks forward to engaging with Cornell Cooperative Extension events and projects this season, and meeting others involved in the dairy industry in our region.



Liz, helping out at Ag-Stravaganza

Herbicide Injury Summary

Dwight Lingenfelter, Program Development Specialist and William Curran, Professor of Weed Science

Excessive rains timed with very recent planting and pre-herbicide applications or from late-applied post treatments delayed (by rains) are always a concern in some fields. Growers and advisors are wise to familiarize themselves with the symptoms.

A) Triazines, B) ALS, C) HPPD's, D) PGR's, E) PPO's F) Glyphosate

Most cases of herbicide injury in field crops can be traced to six herbicide classes or families: triazines, ALS-inhibitors, HPPD-inhibitors, plant growth regulators, PPO-inhibitors, and glyphosate. Below are some common symptoms associated with each of the herbicide groups.

Triazines (Group 5): Triazines are photosynthesis-inhibiting herbicides that block the photosynthetic process, so captured light cannot be used to produce sugars. The plant slowly starves to death due to lack of energy. In broadleaved plants, early seedling growth appears normal, but shortly after emergence (when energy reserves in cotyledons are depleted), leaves become mottled, turn yellow to brown, and die. In most cases, the *oldest leaves turn yellow on the leaf margins first*, the veins remain green, and eventually the plant turns brown and dies. Herbicides such as atrazine, simazine, metribuzin, and Velpar could cause this kind of injury (image A – carryover to soybean).

ALS-inhibitors (Group 2): These herbicides work by interfering with one or more key enzymes that catalyze the production of specific amino acids in the plant. When a key amino acid is not produced, the plant's metabolic processes begin to shut down eventually causing plant death. Plants that are sensitive to these herbicides stop growth almost immediately after foliar treatment; seedlings die in three to seven days, established perennials in two tofour weeks. Symptoms include: stunted, yellow, purple veins, dead growing point, roots malformed (bottle-brush). These herbicides have systemic activity throughout the plant and *young leaves are affected first.* Grass plants may be stunted, with interveinal yellowing (chlorosis) or purpling. Corn plants may be stunted and show symptoms of root inhibition such as pruning of lateral roots. Leaves emerging from the corn whorl may not unfurl properly and may be yellow to translucent in appearance. Broadleaf plants may be stunted and chlorotic or purple. Soybean injury can range from stunting to death of the terminal growing point. Soybean leaves may be yellow in appearance and leaf veination may appear red or purple in color. Herbicides such as Classic, Resolve, Cimarron, Permit, Pursuit, Scepter, and Python can cause this kind of injury (image B – post injury on soybean).

HPPD-inhibitors (Group 27): These products are referred to as "bleachers" since they interfere with normal chlorophyll formation. Symptoms are very evident and easy to identify. Effected plants turn white or show bleached leaves, and eventually die if concentration of herbicide is high enough. Herbicides that contain HPPD active ingredients include: Lumax, Lexar, Balance, Corvus, Callisto, Impact, and Laudis. Clomazone (Command, component of Strategy) is not an HPPD-herbicide but is also considered a bleaching herbicide since the symptoms are similar (image C – post injury on corn).

Plant growth regulators (Group 4): In most cases PGR damage occurs not from carryover but from herbicides that are sprayed in adjacent fields and then drifts onto the susceptible crop. PGRs upset normal growth as follows: cells of leaf veins rapidly divide and elongate, while cells between veins cease to divide. This results in long, narrow, strap-like young leaves. Water content increases, making treated plants brittle and easily broken. Cell division and respiration rates increase, and photosynthesis decreases. Food supply of treated plants is nearly exhausted at their death. Roots of treated plants lose their ability to take up soil nutrients, and stem tissues fail to move food effectively through the plant. The killing action of growth-regulating chemicals is not caused by any single factor, but results from the effects of multiple disturbances in the treated plant. Symptoms include: broadleaf plant leaves become cupped, crinkled, puckered, strap-shaped, stunted, and malformed; leaf veins appear parallel rather than netted, and stems become bent, twisted, and brittle, with shortened internodes. Typical herbicides in the PGR family that could cause problems if they drift to adjacent vegetable crops are 2,4-D and dicamba (Banvel, Clarity) (image D – drift injury on soybean).

PPO-inhibitors (Group 14): These herbicides are referred to as *contact herbicides* and they kill weeds by destroying cell membranes. They appear to burn plant tissues within hours or days of application. Good coverage of the plant tissue and bright sunlight are necessary for maximum activity. The activity of these herbicides is delayed in the absence of light. Injury symptoms: all contact herbicides cause cellular breakdown by destroying cell membranes, allowing cell sap to leak out. Effected plants initially have a "watersoaked" appearance, followed by rapid wilting and "burning," or leaf speckling and browning. Plant death occurs within a few days. However, some of the PPO-inhibitors have longer soil residual activity so potential carryover is a concern. Products like Reflex, Flexstar, Authority, Spartan, and Valor can cause injury to certain crops if recropping restrictions are not followed (image E – post injury on corn).

Glyphosate (Group 9): Plant foliage, especially new growth, will first yellow and then turn brown and die within a week or so after herbicide application. Sometimes new leaves on sensitive plants exhibit a bright yellow or even white appearance which can be confused with injury from other herbicide groups (image F – emerging nonRR corn treated with glyphosate).

Maximizing Glyphosate Performance

By: Mike Hunter, Cornell Cooperative Extension of Jefferson County

With the popularity of Roundup Ready® crops and the use of glyphosate herbicide, it is a good time to review ways to improve the performance of the glyphosate and glyphosate-containing herbicides.

Product Formulations

First, glyphosate is the common name of the active ingredient in Roundup herbicide. We are faced with a long list of glyphosate choices and not all are created equally. All of the glyphosate products contain the glyphosate parent acid ingredient that kills the weed. They will also contain one of three different salts that are included to stabilize the product, making it easier to handle and mix with other products. Many of these products will also contain proprietary components used to enhance foliar penetration and improve handling properties.

When comparing glyphosate products, do not use active ingredient (a.i.) to compare rates or costs per gallon, use acid equivalent (a.e.) instead. The active ingredient listed on the jug includes both the glyphosate and the salt present in the formulation. The acid equivalent is a measure of the parent acid, the component that kills the weed.

Weed Size and Species

When glyphosate fails, inappropriate use rate for the specific weed species or size of the weed is frequently the reason. The general rule of thumb is the bigger the weed, the higher the rate required for control. A recent example in New York is poor common lambsquarter control in glyphosate-resistant crops. If the common lambsquarter is three inches or taller, use the higher glyphosate rate.

Spray Additives

Surfactant recommendations vary widely among glyphosate products. Many glyphosate products come with a surfactant already included in the formulation. Follow the recommendations on the product label for additional information on the requirement for any surfactant if it is necessary. Most studies have shown little benefit to adding extra surfactant to a ―fully loaded‖ formulation.

Water Quality

Most well water contains large amounts of dissolved salts. The harder the water, the higher the salt concentration. Dissolved salts in hard water can reduce the glyphosate herbicide's effectiveness. If you want to reduce the antagonistic effects of hard water, consider including ammonium sulfate (AMS) in the tank mix. Most glyphosate products recommend adding spray grade AMS (not fertilizer grade) and the inclusion rate is typically 8.5 to 17 lbs AMS per 100 gallons of water in the spray tank. You can also use a high quality AMS substitute (i.e. Class Act, Dryve, and others) instead of the spray grade AMS. Remember to *always* add the AMS to the tank mix before adding the glyphosate to the tank to prevent the hard water ions from attaching to the glyphosate.

Spray Volume

Label recommendations vary for carrier volumes among glyphosate products. Research indicates that glyphosate applied in water volumes less than 10 gallons per acre often performs better than when applied in water volumes of 20 or more gallons per acre. For most agronomic situations, 10 to 15 gallons of water per acre are adequate. However, it may be beneficial in situations with larger weeds and dense crop canopies to increase the spray volume to 15 to 20 gallons per acre.

Spray Nozzle Selection

Glyphosate's mobility within the plant reduces the importance for spray coverage. Therefore, base nozzle selection on managing droplet size and drift potential rather than optimizing spray coverage.

Environment

During hot, dry weather plants conserve water through changes in both consumption and thickness of the cuticle on the leaf surface. Increasing glyphosate rates during this type of weather may help overcome the effects of the adverse weather conditions.

Rainfall

Glyphosate must penetrate the leaf surface to provide effective weed control. Differences in rainfastness (the time needed after application before a rainfall event for the product to still be effective) among glyphosate products are generally small. Small, sensitive weeds require a shorter rain-free period than larger, more difficult to control weeds. A 30-minute rain-free period may be adequate under ideal conditions.

Dew

There are a wide range of views regarding the influence of the presence of dew at the time of application on glyphosate performance. Many studies indicate that a moderate level of dew would have minimal impact on glyphosate when applied at typical spray volumes. A recent study reports that heavy dew and high spray volume (48 gal/A) triggered runoff from plant leaves. However, this high spray volume is not ever used in any agronomic situation.

As you can see there are many factors that can influence the performance of glyphosate. We have little or no control over some of these factors. It is important to follow these guidelines, specifically the proper timing of application and correct rate for the situation, to achieve the best performance from these herbicide products. If you have any additional questions about maximizing the performance of glyphosate herbicide, contact your local Cornell Cooperative Extension office.

Adapted from Understanding Glyphosate to Increase Performance: Bob Hartzler, Iowa State University; Chris Boerboom, University of Wisconsin; Glenn Nice, Purdue University; Peter Sikkema, University of Guelph

Farm Business Management

Hiring Youth Labor on Your Farm

By: Peggy Murray, Cornell Cooperative Extension of Lewis County

School is almost out and with that, high school students are out looking for a summer job. I always get questions on who can work on a farm, what are they allowed to do and how much do I have to pay them? Below are some guidelines to help you.

Twelve and 13-year-olds are only allowed to work on their parents' or grandparents' farm.

Fourteen and 15-year-olds need working papers (these are available at the student's school) and have limitations on what they are allowed to do.

They are not allowed to:

- operate a tractor of more than 20 PTO horsepower or connect an implement or any of its parts to or from such a tractor
- operate or assist to operate (including starting, stopping, adjusting, feeding, or any other activity involving physical contact associated with the operation) any of the following machines: corn picker, grain combine, hay baler, feed grinder, forage blower, auger conveyer, or the unloading mechanism of a nongravity-type, self-unloading wagon or trailer, or non-walking rotary tiller.
- work in a yard, pen, or stall occupied by a bull, boar, or stud horse maintained for breeding purposes or a cow with a newborn calf (with umbilical cord still attached).
- work on a ladder or scaffold at higher than 20 feet.
- ride on a tractor as a passenger or helper.
- work inside any grain storage facility (silo) designed to retain an oxygen-deficient or toxic atmosphere; work inside an upright silo within two weeks after silage has been added; work inside a silo when a top unloading device is in the operating position; work inside a manure pit; or operate a tractor for packing purposes on a bunk silo.
- Sixteen and 17-year-olds are not required to have working papers and do not have any working stipulations.

Minimum Wage is $7.25/hr and must be paid to all employees with few exceptions.

If you have any questions or concerns about hiring a student, please call Peggy Murray at 376-5270 or 788- 8450. 🗝

Milk Check Analysis Project by PRO-DAIRY

By: Peggy Murray, Cornell Cooperative Extension of Lewis County

Milk pricing and the makeup of milk prices, premiums, and marketing costs continues to vary year to year, and PRO-DAIRY is, for the eighth year, conducting a study of milk checks received. Hundreds of farmers have participated in the past.

This year, PRO-DAIRY is partnering with Dr. Mark Stephenson of the Center of Dairy Profitability at the University of Wisconsin to conduct this project. Milk checks from New York and Wisconsin will be collected and regional differences will be analyzed.

To participate in this year's study, send PRO-DAIRY the final settlement check(s) for milk produced in March 2013, including check(s) received in the middle of April. Only final or settlement checks received in April for March production are needed. Checks received for advanced March production are not needed.

Receiving actual copies of milk check(s) allows PRO-DAIRY staff to accurately identify prices received by farmers and the associated milk marketing costs. All information will be held in strict confidence, and no individual farm data will be reported in any manner. Study participants will receive a personalized report of their farm's milk check, with comparisons to farms by location and by milk shipped for the month. Participants will also receive the report on state averages on milk prices, premiums, and marketing costs.

To Send in Milk Checks:
Milk checks can be mailed, emailed, uploaded online or faxed.

Visit:
http://ansci.cornell.edu/prodairy/MCAP/instructions.html
to print a cover sheet and for further instructions.

Questions:
Jason Karszes, PRO-DAIRY Cornell University,
(607) 255-3809, jk57@cornell.edu.

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All Alone? Is my bulk tank SCC increased from just one cow or the whole herd?

By: Jessica C. Scillieri Smith, DVM, Quality Milk Lab Director - Canton, NY - Submitted by: Ron Kuck, Cornell Cooperative Extension of Jefferson County

As the sun begins to shine a little bit later every day and the grass turns green, many dairy farmers are finding that their attention becomes split between their cows and the field work that needs to get done. However, while summer is the time to ensure that there is enough feed for the year and it is the best quality possible; it is also a very critical time for milk quality. Most farmers see an increase in the bulk tank Somatic cell count (SCC) during the hot summer months.

Somatic cells are white blood cells present in the milk of a cow. The udder recruits those cells from blood when there is inflammation, caused by infection in the mammary gland. Somatic cells are specific for the mammary gland and are not elevated during other types of infections. In the vast majority of herds a relatively small number of cows are responsible a large portion of the excessive somatic cells in the bulk tank.

The outside air temperature itself does not cause the increase in a cow's SCC, in the same way that the summer heat does not cause a person to have an increased white blood cell count in their body. The increase in SCC during the summer can be due to an increase in environmental mastitis or to an increase in SCC in cows already chronically infected. An increase in environmental mastitis can be seen during the summer due to several factors. The most important factor may be increased exposure, especially in herds that are on pasture during the summer. While pastures can be cleaner than the barn, in the summer heat cows will choose to lay down in cool places that may be moist and crowd under trees with their herd mates. In other situations, barns may become warmer and the additional heat stress may lower the cow's immune system enough to increase the risk of infection. Finally, barns with misters or sprinkler systems may be putting their cows at additional risk when dirty water drips down from the cow's back onto the udder after milking.

But how does one address this problem? While there are many management decisions and changes that can improve the situation, those are very specific for each farm. In order to determine which cows (and how many cows) are contributing to the bulk tank SCC, a dairy farmer should first look to his contribution list. This list is included in the monthly report generated after test day, or can be generated through Dairy Comp 305 if it is used on the farm (**command: Econ ID \SC)**. By looking at the two examples below, we will see the difference in the effect of one or two cows on the bulk tank SCC.

As you can see, especially with a small herd, just one or two cows with a spike in SCC can become a large contributor to the bulk tank SCC. In herd A with 500 cows, three cows combined were contributing over 20% of the bulk tank SCC. Because this herd is so large, cows with SCC's (in the millions) may only increase the tank SCC by 30,000 cells/ml. However, in Herd B with 50 cows, cow 1 had a low SCC at the last test day and now has a SCC of almost 4 million. If this cow is removed from the tank, the bulk tank SCC drops from 221,000 cells/ml to 105,000 cells/ml and the farmer is able to increase his income through premiums. This farmer was able to deal with the cow in question because he had culture results to identify the type of infection present and manage the cow appropriately.

As we enter summer, please remember to keep an eye on your bulk tank SCC. Any changes may be due to one or two cows than can be identified and quickly dealt with to bring your SCC back down and ensure that you continue to receive premiums!

Herd A – ~500 cow freestall herd, top three cows contributing over 20% of the tank SCC

Without any cows removed : Bulk Tank SCC 140

					Bulk Tank after removing only this cow from tank			Bulk Tank after removing cow and all cows above it		
ID	#>4	MILK	SCC	%Tank	Price	@SCC	Income	Price	@SCC	Income
1	1	74	6242	8.6	20.38	128	7760	20.38	128	7760
2	1	135	2709	6.8	20.38	130	7748	20.38	119	7732
3	1	43	6729	5.4	20.38	132	7766	20.38	111	7724
4	1	92	2237	3.9	20.38	135	7756	20.38	106	7705
5	1	92	1886	3.2	20.38	135	7756	20.38	102	7686
6	1	68	2125	2.7	20.38	136	7761	20.38	98	7672

Herd B – ~50 cow tiestall herd, top cow contributing over 50% of the tank SCC

Without any cows removed : Bulk Tank SCC 221

					Bulk Tank after removing only this cow from tank			Bulk Tank after removing cow and all cows above it		
ID	#>4	MILK	SCC	%Tank	Price	@SCC	Income	Price	@SCC	Income
1	1	90	3940	53.6	20.19	105	585	20.19	105	585
2	3	57	746	6.4	20.15	211	591	20.21	93	574
3	1	55	528	4.4	20.11	215	590	20.20	84	563
4	3	67	400	4.1	20.13	217	588	20.20	76	549
5	4	34	606	3.1	20.12	216	594	20.19	70	542
6	2	43	460	3.0	20.14	217	593	20.20	63	534

Quality Milk Production— Getting to the Next Level

By: Ron Kuck, Cornell Cooperative Extension of Jefferson County

One way to satisfy the increasing demand for your milk and to take the pressure off increasing costs is to reduce your Somatic cell count, (SCC).

A 100-cow dairy, making 65 lbs./cow/day with 400k bulk tank SCC would like to increase milk production and get to their first premium at 250K SCC ($.25/cwt., on top of the $20/cwt. milk). At a bulk tank SCC of 400k, they would have a yearly missed bonus of $5,931 and missed milk check of $7,518 for a total of $13,449. This farm had a milk loss of 36,500 lbs.

You can assess your own situation by linking to the University of Kentucky **Milk Quality Economic Opportunity Dashboard at:** http://www2.ca.uky.edu/afsdairy/MilkQualityCalculator. CCE of Jefferson and Lewis Counties in conjunction with the NNY Dairy Institute and Quality Milk Production Services, will present a series of three quality milk workshops conducted locally. The program will be broken into two sections. The morning section will be focused to those farms looking for their first quality milk premium. The afternoon section will be more rigorous for those whose goal is to get to the next premium or quality milk level. All sections, however, are open to any dairy producer.

Photo: www.pondhilldairy.com

(Continued from the cover…Nitrogen on Corn Fields)

The crop is very high in sugars which we found allows rapid fermentation even at higher moisture levels. Conversely, mowing and leaving it over night will produce a tremendous amount of butyric and clostridia while removing much of the energy that you grow the crop for. If you are a crop manager that can stay on top of things, then planting BMR sorghum-sudan would work. What about BMR Sorghum? Most BMR sorghum is longer season than we have left. For southern areas (south of the Mason Dixon line) there is an *83 day BMR sorghum*. It is critical that it be drilled at less than 8 lbs of seed/acre to reduce the potential for lodging. Feed quality is excellent, and because of a special gene, the dry matter at direct cut can be great for fermentation.

Don't Underestimate Cool Season Grasses

For those who took a smaller but very high quality first cut, the ample moisture will give you a chance for high yields of top digestible forage in the second cutting. This has occurred multiple times in the past and is now a standard —ignore how much yield is in the first cut, take it at optimum harvest. Then feed the crop. The limiting factor for yield of grass is available nitrogen. Farmers found in previous years that 75-100 lbs of N on re-growth after first harvest gave tremendous 2nd cutting yields of quality forage. In fact a few reported that this gave them more in the second than the first crop. Nitrogen fertilizer on grass has a $4 to $1 return on investment. The third window for yield from grass is in the cool fall when grasses put on another burst of growth and the cool conditions allow for very high quality. In fact, the late cut grass is your last chance to harvest substantial forage for the highest producing cows. The nitrogen cost is more than paid back in savings on soybean meal when you feed this well managed forage. For intensive grass management like this **raise the cutter bar especially on disk mowers!** The grasses grow mostly from top material. The more you leave the more you get in speed and quantity of regrowth.

Last Chance for Forage

As we learned last year, drilling 3 -5 bu/a of oats at the beginning of August (later in areas further south of Albany, NY) will give you 2 – 4 dry matter tons of very high quality forage at the end of September. It will need to be fed so it is a good place to put manure for an economical crop.

USDA United States Department of Agriculture

Crop Insurance Reminders for Those Affected by Vomitoxim

Raleigh, North Carolina, June 20, 2013 – Weather conditions have made the fungus **vomitoxin** a threat to this year's wheat crop. Scott Lucas, Director of USDA's Risk Management Agency's (RMA) Raleigh Regional Office, offers reminders for producers with crop insurance.

If you think your wheat has vomitoxin, notify your crop insurance agent **before** being moved into commercial storage. A producer may also make arrangements with their insurance provider to leave representative sample areas of the unharvested crop. The adjuster will take samples from these areas for vomitoxin testing. Producers cannot collect their own samples. Samples must be collected by their insurance provider or a disinterested third party, such as an approved elevator.

A list of approved testing facilities can be found on our website: http://www.rma.usda.gov/fields/nc_rso/2011/vomitoxin.pdf

Additional vomitoxin information can be found on the RMA website: http://www.rma.usda.gov/handbooks/25000/2013/13_25010-2h.pdf

Contact your insurance agent with any questions concerning vomitoxin. Your crop insurance agent can provide you with additional information specific to your needs.

EFFECTS OF FLODING OR PONDING ON YOUNG CORN

R.L. (Bob) Nielsen, Agronomy Dept. Purdue University

Recent intense rainfall events (technically referred to as “toad stranglers” or “goose drownders”) have caused flooding of low-lying corn fields or ponding (standing water) in poorly drained swales within fields. Other areas within fields, while not technically flooded or ponded, may remain saturated for lengthy periods of time.

What are the prospects for recently submerged corn fields or plants simply enduring days and days of saturated soils? The flippant answer is that such suffering crops will survive until they die.

What I mean to say is that no one can tell you with certainty the day after the storm whether a ponded area of a corn field will survive or whether there will be long-term yield consequences until enough time has gone by such that you can assess the actual recovery of the damaged plants. We can, however, talk about the factors that increase or decrease the risks of severe damage or death to flooded soils.

Plants that are completely submerged are at higher risk than those that are partially submerged.
Plants that are only partially submerged may continue to photosynthesize, albeit at limited rates.

The longer an area remains ponded, the higher the risk of plant death.
Most agronomists believe that young corn can survive up to about 4 days of outright ponding if temperatures are relatively cool (mid-60's F or cooler); fewer days if temperatures are warm (mid-70's F or warmer).
Soil oxygen is depleted within about 48 hours of soil saturation. Without oxygen, the plants cannot perform critical life sustaining functions; e.g. nutrient and water uptake is impaired and root growth is inhibited (Wiebold, 2013).

Even if surface water subsides quickly, the likelihood of dense surface crusts forming as the soil dries increases the risk of emergence failure for recently planted crops.
Be prepared with a rotary hoe to break up the crust and aid emergence.

The greater the deposition of mud or old crop residues on plants as the water subsides, the greater the stress on the plants due to reduced photosynthesis.
Ironically, such situations would benefit from another rainfall event to wash the mud deposits from the leaves.
Corn younger than about V6 (six fully exposed leaf collars) is more susceptible to ponding damage than is corn older than V6.

This is partly because young plants are more easily submerged than older taller plants and partly because the corn plant's growing point remains below ground until about V6. The health of the growing point can be assessed initially by splitting stalks and visually examining the lower portion of the stem (Nielsen, 2008a). Within 3 to 5 days after water drains from the ponded area, look for the appearance of fresh leaves from the whorls of the plants.

Extended periods of saturated soils AFTER the surface water subsides will take their toll on the overall vigor of the crop.
Some root death will occur and new root growth will be stunted until the soil dries to acceptable moisture contents. As a result, plants may be subject to greater injury during a subsequently dry summer due to their restricted root systems.
Nutrients like nitrogen are rapidly remobilized from lower leaves to upper, newer leaves; resulting in a rapid development of orange or yellow lower leaves.
Because root function in saturated soils deteriorates, less photosynthate is utilized by the root system and more accumulates in the upper plant parts. The higher concentration of photosynthate in the stems and leaves often results in dramatic purpling of those above-ground plant parts (Nielsen, 2012).

Concomitant (I found a new word in the dictionary!) with the direct stress of saturated soils on a corn crop, flooding and ponding can cause significant losses of soil nitrogen due to denitrification and leaching of nitrate N.
Significant loss of soil N will cause nitrogen deficiencies and possible additional yield loss.
On the other hand, if the corn dies in the ponded areas it probably does not matter how much nitrogen you've lost.

Lengthy periods of wet soil conditions favor the development of seedling blight diseases, especially those caused by Pythium fungi (Sweets, 2012).
Poorly drained areas of fields are most at risk for the development of these diseases and so will also be risky for potential replant operations.

Certain diseases, such as common smut and crazy top, may also become greater risks due to flooding and cool temperatures (Pataky and Snetselaar, 2006; Sweets, 2011).
The fungus that causes crazy top depends on saturated soil conditions to infect corn seedlings.
The common smut fungal organism is ubiquitous in soils and can infect young corn plants through tissue damaged by floodwaters. There is limited hybrid resistance to either of these two diseases and predicting damage is difficult until later in the growing season.

Also information resources for flood damaged crops:
http://www.agry.purdue.edu/ext/corn/cafe/flood/

Call if you would like a 2nd opinion. -Janice

Table from article on page 13.

FEEDVAL: Comparative Values Calculated from Crude Protein, TDN, Ca and P
Referee Feeds Used To Calculate Value Of Nutrients
W.T. Howard and Randy D. Shaver, University of Wisconsin-Madison
November 1997

Date: 07/03/13

Referee Feeds Used to Calculate Value of Nutrients

Item	Energy		Protein		Calcium		Phosphorus	
Feed:	Corn, Shelled		48% CP Soy Meal		Feed Limesto		Dicalcium Phosphate	
Cost $	6.79	$/Bu	490.0	$/Ton	8.00	$/cwt	40.00	$/cwt
D.M., %	85.0		89.0		98.0		98.0	
C.P., %	10.0		53.9					
TDN, %	88.0		87.0					
Ca, %	0.02		0.28		36.00		18.00	
Phos., %	0.30		0.67				21.00	

Calculated Value of Nutrients, C.P., TDN, Ca & P			
Ca, $/lb ->	$0.218	CP, $/lb--->	$.381
P, $/lb --->	$1.757	TDN $/lb--->	$.123

Early Season Corn Nutrient Deficiencies and Management Options

Chad Lee, Extension Agronomist, University of Kentucky

There have been numerous reports of corn that is slightly yellow, purple or striped. There are many reasons for these symptoms to occur. The top three that may cause this are 1) temporary or transient deficiency due to environmental conditions, 2) sidewall compaction and 3) nutrient shortage in the soil.

A. Corn displaying "striping"or interveinal chlorosis on May 31, 2013.

B. Corn in the same area of the field on June 11, 2013 with no striping.

Transient deficiency occurs when the plant is young and tends to be associated periods of weather that remain extra cloudy and/or wet and/or cool. Soil compaction is not a problem and soil fertility is adequate in these situations. An example of transient deficiency is displayed in these two images. The first image was taken on May 31, 2013 and the corn was striped. We normally associate these symptoms with zinc (Zn) deficiency in this region of the country. The fertilizer regime in this field was such that Zn should have been adequate. The roots were not hindered by sidewall compaction. The next image was taken 12 days later in the same area of the field and the corn is a healthy green at this point. No additional fertilizer was applied between the first and second images.

The corn simply received some sun and warmer weather. These types of deficiencies rarely result in yield losses, even in corn that yields more than 250 bushels/acre.

Sidewall compaction is common this year since many fields were planted a little too wet. In these cases, the roots need to break through the sidewall of the seed furrow to get into the rest of the soil where the nutrients are residing. While the foliar product might improve the appearance of the leaves, they will not help the roots get through the sidewall.

Soils short on nutrients will result in nutrient deficiency symptoms in corn as well. If a soil test reveals low nutrient levels, then that nutrient needs to be applied to the field, if possible. In the case of Zn, a foliar Zn fertilizer may be adequate for that crop that year. If potassium or phosphorus are short, a foliar fertilizer will not provide enough nutrients. In these cases, a soil-applied fertilizer (i.e. muriate of potash, DAP, triple super phosphate, etc.) are needed.

The visible slit from the seed furrow is a sign of sidewall compaction, but is not visible in all fields that have a problem.

Depending on the nutrient deficiency and how quickly a plant recovers (whether breaking through the sidewall or a soil amendment is made) there may be minimal yield loss.

Source: *Grain Crops Update.* University of Kentucky. College of Agriculture.

What is Standing Hay Worth?

Janice Degni, Area Extension Field Crops Specialist

The only right answer to this question is, ***It depends*!** What is the makeup (species) of the field? What's the stage of development/quality and yield? Every field deserves its own evaluation. I use a 3-step process to arrive at a value fair to both parties. You can also use the FeedVal program for pricing haylage from the field or bunk. Remember Fresh chopped haylage out of the field will have about a 10% shrink during fermentation and should be considered in the final price.

Step 1. Both parties should **agree on a value for the crop** if it were harvested **as dry hay**. That value can easily be converted to haylage by adjusting for dry matter. There are a couple of ways to arrive at the current hay value. Use local market conditions. Call a broker. What are the neighbors buying or selling for. A resource-benchmark that I like to refer to is the Pennslyvania Hay Auction Summary (http://www.ams.usda.gov/mnreports/ln_gr111.txt).

It broadens the market and reports actual hay prices paid by quality rating and quantity sold. Another ground truthing method is to arrive at a value based on grain displacement. There are several spreadsheet calculators available on line. FeedVal, is one such spreadsheet developed by University of Wisconsin Extension that calculates the value of legume, grass, or mixed hay at different stages of maturity based on current corn and soybean meal prices. Armed with the current price of a bushel of corn and a ton of soybean meal it is fairly straightforward to use and interpret. Find FeedVal under Forage and Feeding at http://www.uwex.edu/ces/crops/uwforage/dec_soft.htm.

Step 2. Calculate Harvest Costs. I use a combination of local custom rates (mostly not published) and the Pennslyvania Custom Rates (www.nass.usda.gov/pa). Some rates are by the acre, others by the hour, so an additional estimate of throughput is needed.

Current Rates	
Mow	$16/ac
Chop & Merge	$30/ac
Rake	$10-$12
Large Round or Square Baling	$8-12/bale

Step 3. Estimate Yield/Ac. Use storage dimensions to estimate tons stored or count bales or loads and weigh a few representative units. If taken as haylage record dry matters.

FeedVal Printout based on estimated corn and soybean meal prices July 2013.

Current prices for corn/corn meal and soybean meal are around $7.00/bu/$250/ton and $490/ton, respectively.

FORAGES	D.M. %	C.P. %	ADF %	NDF %	TDN %	Ca %	Phos %	Value $/ 100 lb DM	Value $/Ton As Fed Feeding Loss % 0.0	5.0	10.0	RFV
				Composition, % of Dry Matter								
Alfalfa -Bud	100.0	22.0	30.0	40.0	65.5	1.30	0.30	$15.23	$305	$289	$274	152
Alfalfa 1 ST Flower	100.0	19.0	33.0	44.0	63.2	1.25	0.29	$14.05	$281	$267	$253	134
Alfalfa Mid Bloom	100.0	16.0	38.0	50.0	59.3	1.15	0.27	$12.65	$253	$240	$228	110
Alfalfa Full Bloom	100.0	13.0	43.0	60.0	55.4	1.10	0.25	$11.26	$225	$214	$203	86
Alf-Grass Bud	100.0	18.0	30.0	45.0	65.5	1.00	0.28	$13.98	$280	$266	$252	135
Alf-Grass Mid Bloon	100.0	15.0	40.0	55.0	57.7	0.85	0.24	$12.05	$241	$229	$217	98
Alf- Grass Mature	100.0	12.0	45.0	60.0	53.8	0.75	0.22	$10.65	$213	$202	$192	83
Grass-Boot Stage	100.0	16.0	35.0	55.0	61.6	0.50	0.30	$12.85	$257	$244	$231	104
Grass Heading	100.0	12.0	40.0	65.0	57.7	0.50	0.25	$11.13	$223	$211	$200	83
Grass Mature	100.0	7.0	45.0	75.0	53.8	0.45	0.20	$9.11	$182	$173	$164	67
Corn Silage-Ex.	100.0	8.2	24.0	45.0	70.2	0.30	0.20	$11.44	$229	$217	$206	145
Corn Silage V.G.	100.0	7.5	27.0	48.0	67.9	0.30	0.20	$10.95	$219	$208	$197	132
Corn Silage-Fair	100.0	7.5	33.0	55.0	63.2	0.30	0.20	$10.37	$207	$197	$187	107
Corn Sil w/10lb Ure	100.0	11.5	27.0	48.0	67.9	0.30	0.20	$12.10	$242	$230	$218	132
Corn Stalk Silage	100.0	6.5	38.0	63.0	59.3	0.40	0.10	$9.45	$189	$180	$170	88
Corn Stover, Dry	100.0	6.0	40.0	65.0	57.7	0.40	0.10	$9.11	$182	$173	$164	83
Sm. Grain -Early	100.0	12.8	35.0	55.0	61.6	0.45	0.28	$11.88	$238	$226	$214	104
Sm. Grain -Late	100.0	9.0	42.0	63.0	56.2	0.40	0.25	$10.05	$201	$191	$181	83
Straw	100.0	4.0	50.0	75.0	50.0	0.30	0.10	$7.55	$151	$144	$136	62
Cannery Waste, Cor	100.0	7.5	33.0	55.0	63.2	0.35	0.15	$10.29	$206	$196	$185	107
Oats & Peas	100.0	16.0	33.0	50.0	63.2	0.65	0.27	$13.02	$260	$247	$234	118
Milage(Millet & Soy	100.0	15.0	37.0	57.0	60.1	0.75	0.26	$12.35	$247	$235	$222	98
Trical	100.0	13.0	34.0	55.0	62.4	0.60	0.23	$11.98	$240	$228	$216	106
Sorghum-Sudan -Ea	100.0	14.0	35.0	50.0	61.6	0.50	0.23	$12.15	$243	$231	$219	115
Sorghum-Sudan -La	100.0	8.5	40.0	61.0	57.7	0.64	0.23	$10.11	$202	$192	$182	88
Other	0.0	0.0	0.0	0.0	0.0	0.00	0.00	$0.00	$0	$0	$0	0

Conversion of Hay to Haylage Price		
$200/ton	**$170/ton**	**$155/ton**
$200/ton /1880# DM/ton =.106/lb DM	$170/ton /1880# DM/ton =.09/lb DM	$155/ton /1880# DM/ton =.082/lb DM
To Convert to Haylage adjust for Moisture. (1 ton haylage = 2000 lbs, 2000 lbs X .35% DM = 700 lbs DM/ton.)		
700 lbs DM X .106 = $74/ ton @ 35% DM	700 lbs DM X .09 = $63/ ton @ 35% DM	700 lbs DM X .082 = $57/ ton @ 35% DM

The value given is per 100 pounds of drymatter. At 88% DM, 1 ton of hay has 1760 lbs of drymatter. Multiply the Value/100 lb DM by 17.6 to arrive at dry hay value per ton.

Prime "$/ton = (.0191 x S)+ (.057 x C) + (.742 x H) 1780 lbs DM

=$172 0.10 cost /lb DM

S = $490 35% haylage = 700 lbs DM

C = $250 $70 per ton haylage

H = $200

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STRIPED CORN – Potential Nutritional Deficiencies

Jim .Camberato, Purdue Pest and Crop Newsletter, June 21. Issue 12

Interveinal chlorosis of corn leaf tissue (striped corn) occurs to some extent every growing season. Several nutrient deficiencies result in similar striped corn symptoms that can be very difficult to distinguish.

Plant sampling and tissue analysis should be conducted to diagnose if leaf striping is due to a particular nutrient deficiency or multiple nutrient deficiencies or another factor unrelated to plant nutrition. Plant samples should be obtained from both good and bad areas of the field. Whole plants can be sampled when plant height is less than 12 inches tall. The most recently collared leaf is suggested when plants exceed this height. The earleaf is sampled at tasseling and silk emergence.

Soil sampling at the same time as plant sampling can help determine whether or not impaired nutrient levels in the plant tissue are a result of inadequacies or imbalances in soil nutrient and pH levels or inefficiency of the crop root system.

Not all cases of striped corn are due to nutrient deficiency. Nematode predation and/or herbicide injury have been implicated as causal factors in some instances of striped corn that cannot be attributed to nutrient deficiencies.

Consider submitting whole plants and roots with rootzone soil to the Purdue Plant & Pest Diagnostic Laboratory for nematode analysis and herbicide injury diagnosis.

Sulfur (S) deficiency

Sulfur (S) deficiency may cause striping or overall yellowing of corn leaves. Release of S from soil organic matter (O.M.) is the primary source of S for plants when no fertilizer S is applied. Cold, wet, low O.M., and sandy soils, high residue, and no-till, are conditions that promote S deficiency. Tissue S <0.15 – 0.18% and/or a N:S ratio >15:1 - 20:1 are indicative of S deficiency.

Zinc (Zn) deficiency

Zinc (Zn) deficiency may cause striping that begins at the base of the leaf and progresses to the tip. Stripes often coalesce to form a white band along the edge of the leaf or the midrib. High pH, low O.M., sandy soils are most prone to Zn deficiency especially in cool, cloudy springs. Tissue Zn <15-25 ppm is considered deficient.

Magnesium (Mg) deficiency

Magnesium (Mg) deficiency may cause striping and/or reddening of corn leaves. Yellow areas between the veins may be 'beaded' rather than striped. Low Mg is often associated with low pH, but Mg deficiency can occur at high pH if imbalances with calcium occur. High soil potassium (K) and high applications of K and anhydrous ammonia can aggravate Mg deficiency. Tissue Mg< 0.15-0.20% is considered deficient.

Manganese (Mn) deficiency

Manganese (Mn) deficiency causes striping that is often described as olive green or mustard yellow in color with veins remaining green. High pH, high O.M., and dry soil conditions reduce Mn availability in certain soils resulting in Mn deficiency. Tissue Mn< 20 ppm is considered deficient.

Other useful information:

- Zinc deficiency in corn. <http://www.agry.purdue.edu/ext/soilfertility/ZincDeficiencyCorn.pdf>.
- Sulfur deficiency in corn. <http://www.agry.purdue.edu/ext/corn/news/timeless/SulfurDeficiency.pdf>.
- Manganese deficiencies in Indiana soils. <http://www.agry.purdue.edu/ext/pubs/AY-276-W.pdf>.
- Role of micronutrients in efficient crop production. <http://www.extension.purdue.edu/extmedia/AY/AY-239.html>.
- Tri-state fertilizer recommendations for corn, soybean, wheat & alfalfa. <http://www.extension.purdue.edu/extmedia/AY/AY-9-32.pdf>.

Cornell University
Cooperative Extension
Cortland County

South Central New York
Tompkins Cortland Chenango Tioga
Area Dairy & Field Crops Team

New York Crop Insurance Education Program
Risk Management Agency, USDA
New York State Department of Agriculture & Markets
http://www.agmkt.state.ny.us/AP/CropInsurance.html

AVOIDING SUMMER RISKS ON PASTURE

The Cornell South Central Dairy Team has organized three Pasture Walks at farms where producers are using management practices to mitigate these challenges.

Farmers who graze their livestock know that May and June are the best months for grazing in the Northeast.

Grazing is still good for the rest of the summer but has challenges: heat stress for the animals, lack of rain for the pastures and low production of the cool season grasses in the pastures.

REDUCING HEAT STRESS WITH SILVOPASTURING

Wed. July 31 10:30 AM-2PM

Chedzoy's Angus Glen Farm, 3050 Station Road, Watkins Glen, NY.

Brett Chedzoy has given many talks on silvopasturing. His talks focus on animal welfare as well as benefits to the forest's production. This event will give participants a chance to see what silvo-pasturing looks like after it has been in use for a number of years.

Angus Glen is a multi generational farm that has used a number of conservation practices that benefit their beef herd. We will see areas that have been managed for silvopasturing for many years as well as areas they are currently transitioning to the practice.

IRRIGATION FOR DAIRY PASTURES

Wednesday, Aug 14th 11AM-2PM

Benson's Bensvue Organic Dairy, 295 Lansingville Rd, Lansing, NY.

2012 was a dry year for most of us in the Northeast. This was a problem for organic dairies that are required to provide 30% of the cow's diet from pasture for 120 days. Last summer Chandler Benson struggled to find fresh pasture for his 350 milking animals. His solution for the future was to have his father, Chuck Benson, dig a 5 million gallon pond in the middle of their grazing system. For those attending this event we will see the irrigation system and how it can be used to mitigate the risk of drought to a grazing system. Chandler also planted Sanfoin, a legume used in Russia and Saskatchewan Canada. We will take a tour of the plot to see how it works in Central New York.

SUMMER ANNUALS AUGMENT COOL SEASON GRASSES WITH ARDEN LANDIS

Wednesday, Aug 21st 11AM-2PM

Doug and Martsje Riehlman, 6242 Rt 11, Homer, NY

The Riehlmans intensively manage their high value acreage to provide feed for their dairy.

After the shortage of forage last year, they sought to maximize yields during the summer months. They took off the 1st cutting and intend to plant a Sudan Grass Hybrid. Dairy Consultant, Aden Landis from Kirkwood, PA, will discuss how summer annuals can maximize production through the use of double cropping on dairy farms.

These pasture walks are supported by the USDA's Risk Management Agency and the NYS Dept. of Agriculture & Markets. Fay Benson will provide information on crop insurance tools to manage risks on farms. For more information on crop insurance go to: http://www.agriculture.ny.gov/AP/CropInsurance.html

Please RSVP to help us plan lunch, which will be provided at each of the events with funding from the NY GLCI. Contact Sharon VanDeuson at 607-753-5078 or shv7@cornell.edu.

For more information on the series contact Fay Benson at Cortland Cornell Cooperative Extension, 607-753-5213 or afb3@cornell.edu.

Cornell University
Cooperative Extension
South Central New York Dairy & Field Crops Team

South Central New York Area Dairy & Field Crops Team

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CALENDAR OF EVENTS

JULY 17	**NYS WEED SCIENCE FIELD DAY. Field Crop Weed Control Trials with Dr. Russ Hahn** **Robert B. Musgrave Research Farm, 1256 Poplar Ridge Rd., Aurora. CCA/DEC Credits available.** **NYSABA Pork Barbecue 11:30 AM – 1 PM. $17 pre-sale or $20 at the door. Pre-registration requested.** **Review Weed Plots. 1:30 PM – 4:30 PM**
JULY 18	**AURORA FARM FIELD DAY: CCA/DEC Credits available.** ***(See program page 3).*** **9 AM – 3 PM**
JULY 27	**FARM CITY DAY AT MCMAHON'S E-Z ACRES** **Visit a dairy farm to experience agriculture 1st hand. 5130 West Scott Road, Homer. 11 AM – 4:00 PM**
JULY 31	**NRCS BIOFEEDSTOCK CONFERENCE** USDA-NRCS Big Flats Plant Material Center, 3266 Rte 352 Big Flats. Biomass energy workshop with tour, demonstrations and presentations from Cornell University, SUNY Morrisville, Private Industry and NRCS. Presentations on establishment methods and sustainability on marginal land, contract planting and harvesting and utilization of biomass for thermochemical and lignocellulosic conversion and pelletization. To pre-register: http://smallfarms.cornell.edu/events/ or 607-562-8404.
JULY 31	**REDUCING HEAT STRESS WITH SILVOPASTURING 10:30 AM – 2 PM** **Chedzoy's Angus Glen Farm, 3050 Station Road, Watkins Glen, NY.**
AUG 13	**NYS CORN & SOYBEAN ASSOCIATION – 2013 Summer Crop Tour – "Breaking the Yield Barrer":** **Identifying Growth Stages in Soybeans,** with Bill Bauer; **Understanding Yield Components in Soybeans,** with Ken Ferrie; **Root Growth & Soil Density,** with Missy Bauer and **Precision Ag & Dairy Farming,** with Isaac Ferrie. Crop Tour hosted by Du Mond Ag, 5083 White Rd., Union Springs. Pre-register at (315) 583-5296 nycornsoy.org.
AUG 14	**IRRIGATION FOR DAIRY PASTURES 11 AM – 2 PM** **Benson's Bensvue Organic Dairy, 295 Lansingville Rd., Lansing, NY.**
AUG 21	**SUMMER ANNUALS AUGMENT COOL SEASON GRASSES WITH ARDEN LANDIS 11 AM – 2 PM** **Doug and Martsje Riehlman, 6242 Rt. 11, Homer, NY.** ***See page 15 for more details on all of the above pasture walks.***