SCNY Dairy & Field Crops Digest

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

Healthy Soils for Grazers

-Fay Benson, Area Small Dairy Support-

Soil Health has been identified as a limiting factor to productivity on many farms nationwide. Seed companies, plant breeders and agronomists have done an excellent job of improving seed selection and the nutrient or chemical status of crop growing soils but now realize they need to also focus on the physical structure and biological life in the soil to make the most of seeds and nutrients.

On Farm Demonstrations will be presented by New York's Grazinglands Coalition, Organic Valley Coop, & Cornell Cooperative Extension. (See Calendar for registration information.)

At the events there will be a "Soil Health" trailer equipped to measure and demonstrate the three vital components of soil health – physical, chemical, and biological. This trailer is part of a 5 state Conservation Innovation Grant funded by the NRCS. Fay Benson will compare 3-4 soil management plots under a rainfall simulator to measure aggregate stability. Participants will use penetrometers to measure soil compaction and a demonstration of the active carbon test which measures how much food is available for the soil biology.To help tie it all together Mark Kopecky, a soil agronomist working with Organic Valley Coop, will discuss the numerous management factors that contribute to overall soil health and consequently the growth and productivity of grazing lands.

Aspects of grazing lands that can be managed to positively affect rainwater runoff and infiltration include; livestock concentration, soil compaction and erosion, living plant cover, dead plant residue on the surface, forage mass and height and soil organic matter levels.

Not all risks can be managed on a farm so there will be a short presentation on the USDA's RMA policies to help address those risks. ¢

August 2015

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We are pleased to provide you with this information as part of the Cooperative Extension Dairy and Field Crops Program serving Broome, Cortland, Chemung, Tioga and Tompkins Counties. **Anytime we may be of assistance to you, please do not hesitate to call or visit our office.** Visit our website: http://scnydfc.cce.cornell.edu and like us on Facebook: https://www.facebook.com/SCNYDairyandFieldCropsTeam.

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Building Strong and Vibrant New York Communities

"Diversity and Inclusion are a part of Cornell University's heritage.
We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities."

Late Season Nitrogen Deficiency

-Doug Beegle, Professor of Agronomy, Penn State-

With all of the rain we have had since June, there are a lot of questions about nitrogen (N) deficiency.

Two common scenarios are: it was too wet to sidedress, so the corn did not get the necessary N and the other problem was loss of applied N with the excessive rain. Both of these are potential serious limitations for corn this year. Up until tasseling, N application will be beneficial, especially if the crop did not receive adequate N because it was too wet to sidedress. It is more difficult to predict if the crop will respond to additional N if a normally adequate amount of N was applied but may have been lost. Especially if there is a significant amount of organic N in the system, the N level may rebound when the soil dries out.

However, if the crop is showing serious N deficiency symptoms (inverted yellow V, starting at the tip of leaf and going back the midrib on the lower leaves), a late application of N prior to tasseling may be beneficial. Unfortunately, after pollination, there are not a lot of good options. Corn uptake of N declines sharply after pollination. After pollination, corn is mainly redistributing N that it took up during the grand growth period. Therefore, even though applications to corn after tasseling with high clearance equipment are sometimes possible, generally they are not very effective. There have been reports from the Midwest of benefits from modest

applications (30-60 lb N/A) within a couple of weeks after tasseling on severely deficient corn. This will probably not make up completely for the lack of N uptake by the corn earlier, but may provide some benefit.

Application of a small amount of foliar N, will not likely provide any sustained benefit. This may green it up for a day or so, but the amount of N taken up by the crop will be so small from such an application, that it will have minimal overall impact. ◈

The Nebulous of Non-Nodulating Soybean in 2015

-Shawn P. Conley, Soybean and Wheat Specialist, Purdue Extension-

Every year I get an occasional phone call, email or text regarding issues surrounding soybean nodulation concerns. This year it has been non-stop for several weeks! Here are the top four questions and my responses for your consideration.

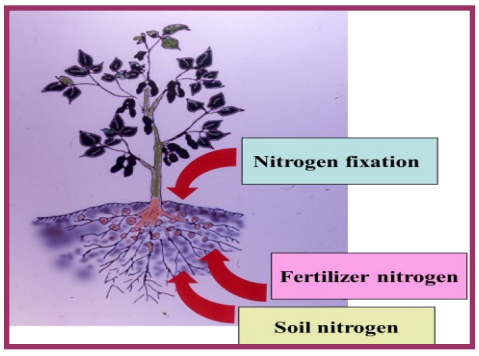
1. Why is nodulation such a problem this year? Abiotic stress such as low pH (≤ 6.0), saturated or droughty soils and cool soil temperatures can negatively impact nodulation (Valentine et al. 2011). Duzan et al. (2004) reported that root hair deformations (a physiological precursor to rhizobia infection and nodulation) was 64 and 82% of the control when rhizosphere (root zone) temperatures were 59 and 63 degree F when compared to 77 degrees F. This suggests that the cool soil temperatures we have been experiencing have likely limited the infection sites available for nodulation to occur. This effect has likely been exacerbated in no-till or compacted conditions in 2015. In short less nodulation sites on the roots means increased likelihood for less nodules.

2. I double inoculated my soybeans on virgin ground and my nodule count is really low? First, please refer to #1 above regarding abiotic stress on soybean nodulation. Secondly remember to read and follow the application, compatibility, and planting timing of inoculants. In reading through various inoculant labels today, I saw everything from 'not tested' to 'not compatible to plant within hours to weeks to months of application'. Lastly remember there is a poor correlation between nodule number and N2 fixation, so don't get overly concerned about nodule count; it is nodule efficiency that matters and you can't measure that by counting. In short, read the labels and make sure everything is compatible and your application and planting window is adequate prior to purchasing the product.

Nodules on inoculated soybean

3. How long will soybeans continue to put on new nodules? Dr. Purcell indicated that they can measure very active N2 fixation almost until the end of seedfill (personal communication). Given the normal life span of an active nodule is 4-5 weeks, this would suggest that soybean will continue to put on new nodules (if the environment is conducive and rhizobia are present) until R6 soybean (late pod fill).

4. Should I apply nitrogen to these poorly nodulating soybeans, and if so, how much? My general an nitrogen to soybean beyond a "starter" rate (≤~30 pounds) will lead to a rapid and dramatic inhibition of N fixation (Sinclair, 2004). Though it does not appear that the applied nitrogen is directly damaging to the N fixation machinery (nodules), it will reduce or stop fixation. If the soil NO3 levels drop, then N fixation can resume in about a week (Sinclair, 2004). Over-application of N will shut down whatever rhizobia is actively working. Furthermore, our 2014 data shows that a soybean plant takes up 3.56 pounds of N in above-ground tissue per bushel of grain. So a 73 bu/a crop removed 267 pounds of N/a. This does not account for below-ground uptake or nitrogen loss and efficiency from the applied nitrogen. In short, that is tough math to get a positive ROI on.



Intake of Nitrogen

Literature cited: Dr. Larry Purcell (personal communication 7/16/15) H. M. Duzan, X. Zhou, A. Souleimanov and D. L. Smith. 2004.Perception of Bradyrhizobium japonicum Nod factor by soybean [Glycine max (L.) Merr.] root hairs under abiotic stress conditions. Journal of Experimental Botany, Vol. 55, No. 408, pp. 2641–2646, December 2004 doi:10.1093/jxb/erh26 Sinclair, 2004. Improved Carbon and Nitrogen Assimilation. "In: Soybeans: Improvement, Production, and Uses." Third Edition. Agronomy No.16. Edited by H.R. Boerma and J.E. Specht. Valentine, A., V. Benidito, and Y Kang. 2011. Legume Nitrogen Fixation and Soil Abiotic Stress: From Physiological to Genomics and Beyond. Annual Plant Reviews. 42:207-248.*

What to Do with a Very Mature (Dead) Hay Crop?

-Mena Hautau, Extension Educator, Field Crop Systems, Penn State Extension-

That old low quality hay crop hay value!

For hay producers, it's been a difficult year to make high quality or even moderately quality hay. Hay prices are also strong and the loss of income is also a challenge. If the hay is beyond use for feed and there is no local bedding market, another option is to send old hay into the "mulch" or "mushroom compost" market.

Mushroom composters want orchardgrass or timothy hay that is mature hay or last year's hay. They do not want alfalfa, hay infested with broadleaf weeds, wet and moldy hay or hay bales that are collapsed. They want lignified hay; hay with a LOW protein content. Composters need the lignin, or carbon, in the hay to create high quality compost. The carbon in the compost is used by the fungi to produce the mushrooms we eat!

Mushroom composters prefer large square bales or round bales. Check with the buyer to learn about their preference and requirements. Round bales are acceptable, but composters will pay less.

Prices offered by the mushroom farms are less than the price of hay for feed and fluctuate with the market. Current quotes from 3 composters in Berks and Chester counties ranged from $70.00 - $115/Ton. The Penn State Agronomy Guide estimates the VARIABLE cost to just maintain an acre of orchardgrass hay at well over $275/T. Call mushroom composters for details about the price, delivery times and locations. Mushroom farms frequently advertise in Lancaster Farming or you can go to this link from the American Mushroom Institute.

The Soil Erosion Season is Upon Us

The benefits of no-till and cover crops are evident as we receive heavy rain from thunderstorms

-Sjoerd Duiker, Assoc. Prof. of Soil Mngmt & Applied Soil Physics, Penn State Ext., College of Ag Sciences-

The past weeks brought the sought-after relieve from the drought that was plaguing much of Pennsylvania. However, some of the rain came down as expected – hard and furious. This is because we have entered the prime soil erosion season with hard rains falling during thunder storms.

The nature of precipitation in our state is much more 'erosive' in the summer than in the winter, with transition periods in fall and spring. The rainfall intensity is very high in these storms and the raindrops are large so they have high impact energy, destroying surface aggregates so the soil seals up and the water does not enter the soil anymore. So those of us who like those meticulously looking fields without a straw in sight are now probably regretting it as runoff carried off the most precious part of the soil with organic matter, fertilizer, herbicides and insecticides. The runoff left the fields but accumulated in the streams, rivers and estuaries of the watershed, causing problems there. That is why it is so important to use management practices that largely eliminate erosion and build soil health.

We all know the traditional practices of strip cropping, conservation rotations, contour planting, grassed waterways, and stream buffers. Those are beneficial, but they are merely band-aids if the working land is eroding away. Research has shown beyond a doubt that soil erosion on cropland can be almost eliminated if it is kept covered with crop residue, if soil is held together and nourished by the roots of living vegetation, and practices are used to promote soil biological activity and build organic matter content. This means using continuous no-tillage practices, maintaining crop residue cover, planting cover crops immediately after harvest of the main crop, as well as using diversity in the crop rotation and in the cover crops, if possible also using manure and animals to the feed the soil.

These pictures show the difference of using tillage versus continuous no-tillage with intensive cover cropping. When rain fell it quickly sealed up the surface of the tilled soil whereas the no-till soil took in all the water without any evidence of runoff or erosion. Ô

Now is a great time to address problems with multiflora rose

-Dwight Lingenfelter, Program Development Specialist & William Curran, Professor of Weed Science-
Penn State Ext., College of Ag Sciences

As spring progresses, multiflora rose aggressively grows and eventually blooms in late May/early June. Several tactics can be used to control this problem weed and these methods will be briefly discussed.

Mechanical control methods include mowing, which requires repeated mowings per season for several years, and excavating, which involves pulling individual plants from the soil with heavy equipment, can be costly, time-consuming and laborious. However, these are viable means for multiflora rose management. Also, management techniques which include biological controls have been used. Two of the more prominent biocontrol agents are rose rosette disease (RRD) and herbivores such as goats or sheep. RRD is a virus which is slowly spreading in our region of the country. Multiflora rose plants infected with RRD usually die within two years. Though RRD may not eradicate the multiflora rose problem, it should help reduce it over the long run. If managed properly, goats and sheep can help control multiflora rose. Research has shown that initially 8 to 10 goats and/or sheep pastured with compatible livestock (cattle) can help reduce rose and other brushy infestations.

Although the above control practices help, several herbicides provide good control of multiflora rose, especially when applied during the bud to bloom growth stages. Three foliar applied herbicides suggested for late-spring/summer are: metsulfuron (Cimarron Plus), Crossbow and glyphosate. Glyphosate has been more effective in Penn State research at fall application time. Products like Milestone and ForeFront generally are not as effective on multiflora rose; while 2,4-D and dicamba (Banvel/Clarity) are not effective.

Metsulfuron (sold as a generic or as Cimarron Plus) provides good control of multiflora rose and can be used as a broadcast or spot treatment. For best control apply either product at a rate of 1 oz/A plus a surfactant for broadcast treatments or 1.0 oz/100 gallons water plus surfactant for spot treatments. Applications should be made in the spring, soon after plants are fully leafed-out. Rose plants must be less than 3 feet tall for treatment to be effective. There is no application to grazing interval for metsulfuron.

Foliar applications of **Crossbow** can be effective on multiflora rose. For spot treatments, use 4 to 6 fl oz/3 gallons water and spray until foliage is uniformly wet. For broadcast applications, use 1.5 to 4 gallons of Crossbow in enough water to deliver 10 to 30 gallons of spray per acre. Early to mid-June is an excellent time to make these applications. Follow-up treatments may be necessary. An interval of 14 days is required for lactating dairy if using 2 gallons/A or less.

Glyphosate can be used as spot treatments on isolated patches of multiflora rose. Apply a 1 percent solution (about 1 qt/25 gallons water) of glyphosate with a hand-held sprayer. Uniformly wet leaves and green stems, but avoid runoff. Application should be made in late summer or early fall when plants are actively growing (after fruit formation). A 7 day interval is required for grazing animals.

No matter which control tactic is used, follow-up maintenance practices are a must for long-term control. Removal of dead brush, annual mowing and adequate soil fertility are examples of practices that should be used to maintain control of multiflora rose and in turn, will encourage pasture growth. ☽

For more information on multiflora rose and its management refer to Multiflora Rose Management in Grass Pastures.

Cropping Notes - August 2015

-Janice Degni, Area Field Crops Specialist-

It seemed like the last newsletter arrived just in time for my assessment of the cropping season up to that point to be out of date. The week before we got the newsletter printed the rain started in earnest and corn that looked absolutely beautiful started to go backward in a very short time. As fields waterlogged yellow corn became the norm. To counteract the nitrogen losses and stress of too much water many farms compensated by sidedressing N either as dry urea or drop tubed UAN. You can clearly tell the corn benefitted from the additional N. Too much rain has been widespread across the corn belt. I have borrowed several articles from other regions that address the impacts of the stress on corn and ear development. (See Waterlogged Corn, p 8.)

I think everyone is pretty much resigned to lower than average corn yields this fall. Corn is short and now during the final week of July most of the early planted corn is tasseled. Early tassels could be seen poking out toward the end of the third week in July. Maturity from silking to blacklayer is about 2 months, depending on weather conditions. Considering that a rough estimate for silage harvest for early planted corn will fall around the third week of September.

Wheat is being harvested now and I haven't really heard where DON levels are. There was plenty of rain during the flowering period which supports mycotoxin infection.

Potato Leafhopper in Alfalfa

There have been pockets of pest damage. It seems like PLH has been a quiet pest this year. You may not notice them until you mow your new seedings. Since hay crop harvest has been delayed by rain you may see hopper burn when you get to the field. Alfalfa fields should be swept to monitor potato leafhopper levels. New seedings are especially vulnerable. The threshold levels vary with plant height. If many nymphs are present (wingless young) there is potential for feeding damage.

Average stem length	Leafhopper/sweep
Less than 3 in. (new seedings)	0.2
3 to 7 in.	0.5
8 to 10 in.	1.0
11 to 14 in.	2.0
15 in. or above	If leafhoppers exceed 2.0 per sweep and if regrowth is within 1 week of harvest, no action needed. If not, use a short-residue insecticide.

Many different insects can be found in a sweep net. Some are beneficial, some insignificant. Others can be plentiful like aphids but no economic threshold has ever been established. I discourage spraying when damaging populations aren't present because the insecticide indiscriminately kills the beneficial insects which can knock the natural insect balance in the field out of whack.

Armyworm damage & other pests

I have found armyworm on a couple of no-till fields. No-till fields are typically planted a little later and grass would provide an attractive place for egg laying by the moths. At one farm the corn was too big to spray but at a second farm we could find 2 or 3 worms per whorl and corn could still be covered with a high clearance rig. We checked nearby oat fields. We found enough worm presence and feeding that some of them needed treatment too. None of the damage was as severe as the statewide infestation a few years ago. Every year there can be pockets or problem spots. I did hear also a report of severe cutworm damage in late planted corn on sod.

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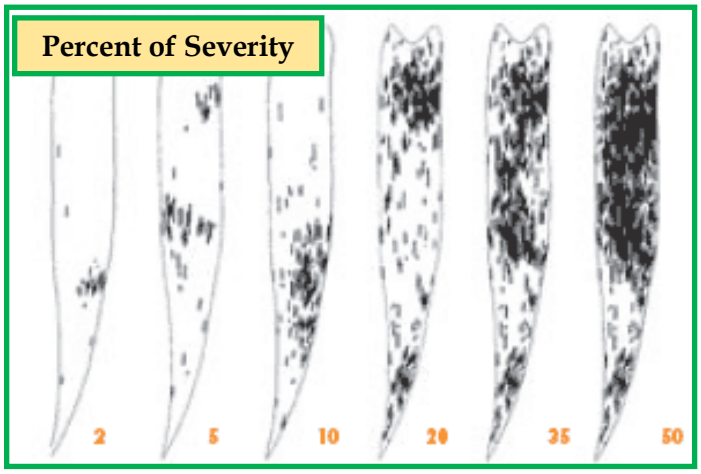
Northern Corn Leaf Blight (NCLB) & Grey Leaf Spot
I have heard reports that Grey leaf spot has infected corn in it's normal trouble spot areas like the Chemung River Valley. I have seen a very few NCLB lesions on BMR field corn but not on non-bmr corn yet. Fungicides are registered for spraying at tassel. Guidelines for fungicide application, "For Grey leaf spot and Northern corn leaf blight, if you have greater than 5% severity on the ear leaf or two leaves below the ear in 50% or more plants in the field just prior to or just after tassel then you might consider a fungicide application." FN (Kleczewski, Nathan. Plant Pathology. U of Delaware Extension. Weekly Crop Update.)



Soybeans
Late May/early June beans have 3-5 flowering nodes. Beans are pretty clean. I have not seen signs of aphids. There are some diseased leaves low in the canopy and Japanese beetle feeding on leaves. In my opinion the 2 biggest pests of beans are 4 legged; woodchucks and deer. Watch your fields for damage and control where you can. The rain and humidity could be setting us up for a year with white mold infections. If you want to control the disease with a fungicide, the treatments, which are protective, have to be made before you can find evidence of the disease. Field history can be a guide. The first step to fighting white mold infection is selecting resistant varieties and the 2nd, dropping population and planting in wider rows to reduce the humidity in the canopy which supports the infection and growth of white mold.

The last 2 weeks of July have had a stretch of hot dry weather and crops are growing like crazy. Earlier there were some beans that were struggling. University of Kentucky agronomist, Chad Lee explains," Numerous fields of soybeans appear yellow or bright green right now. The symptoms mimic nitrogen deficiency, but the plants are really starving for air to the roots and sun on the leaves. Everyone is thinking about applying some nitrogen to help make the plants greener. But what these plants really need is for sunshine to help partially dry the soils.

Rains have saturated our soils and pushed air out of the root zone. That lack of oxygen can lead to slowed activity of the *Bradyrhizobium japonicum* which leads to reduced nitrogen fixation and uptake. Extended periods of saturated soils will kill some of the roots and some of the *Bradyrhizobium japonicum.* Both will rebound quickly once sunshine and air return to the system." (*Yellow Soybeans Need Sun. Grain Crops Update, U of Kentucky*) ♦

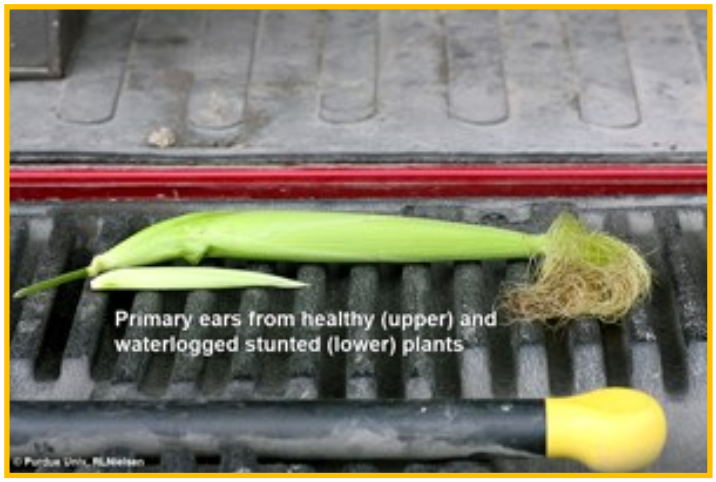
Saturated soils in the low areas result in yellow plants

Waterlogged Corn: A Tale of Two Ears

-R.L. (Bob) Nielsen, Agronomy Department, Purdue University-

One of the concerns with the seemingly incessant ponding or saturation of corn fields around Indiana early this growing season is that the stress imposed by waterlogged, oxygen-deficient soils on corn plants during their rapid growth phase will reduce the ear size potential. If true, then yield potential will be limited regardless of whether the weather moderates for the remainder of the growing season.

The uppermost primary ear of a corn plant is initiated at approximately growth stage V5 (five leaves with visible leaf collars). The maximum number of potential kernel rows (ear girth) on the ear is complete by about V7. Subsequent initiation of ovules for each row (ear length) occurs sequentially from the base of the cob to the tip over several weeks. Ear size determination is thought to be complete by V12 to V14. Severe stress occurring during ear size determination can decrease the potential ear size (reduced ovule numbers). See my 2007 article for more information and photos (Nielsen, 2007).



Ovule row number determination is relatively tolerant to stress due, in part, to it being a relatively strong hereditary trait and also because maximum ovule row number determination occurs over a relatively short time period (2 to 3 leaf stages or about 6 to 9 days). Ovule number per row is relatively more vulnerable to stress for the opposite reasons... less of a hereditary trait (more responsive to growing conditions) and a longer time period for development (more opportunity to experience severe stresses).

Interestingly, our research with corn responses to nitrogen (N) fertilizer rates and plant populations suggests that ear size determination is relatively unaffected by severe N deficiency or excessively high plant populations during the vegetative stages of development. Yield reductions due to either stress are due more so to reductions in actual kernel number (pollination failure and kernel abortion) and kernel weight.

So, what about the stress imposed on plants when they are faced with saturated soils or outright ponding during the ear size determination period? We do not have much data at all on this, but I checked some plants the other day in a partially ponded field to obtain some serendipitous, non-replicated data. The accompanying photos illustrate what I found in this limited sampling of plants. Take it with two grains of salt.

I removed silking ears from three random relatively healthy plants in a relatively unaffected area of the field and lesser developed ear shoots from three random stunted plants from an area that has been ponded and saturated multiple times since early June. The latter plants were certainly not as severely stunted as some of what we see around the state these days, but nevertheless represent quite a bit of the stunted corn that one might consider salvageable (Nielsen, 2015).

The development of the ear shoots removed from the stunted, waterlogged plants was distinctly delayed relative to those from the healthier plants. The latter were in the early stages of silk emergence (R1), while those of the nearby stunted plants were only in the initial stages of silk elongation within the husk leaves. Silk emergence of the stunted plants will likely be at least a week delayed.

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Surprisingly, ovule numbers per row were identical between the ears of the healthy and stunted plants (42). Considering that kernel numbers per row at harvest typically range from 30 to 35, those ovule numbers are certainly acceptable and fairly normal.

However, ovule row numbers were less on the ears from the stunted, waterlogged plants (14 versus 18). Specifically, the ovule row numbers at the very base of the cobs were the same as the healthy ears, but within a few ovules from the base of the cobs, two pairs of ovule rows "disappeared".

Ovule paired rows initially develop as single spikelet primordia rows that eventually divide into pairs as ovule development proceeds from base to tip of the cob during ear size determination. With the ears from the waterlogged plants, it appears that two spikelet primordia rows (potential paired rows) appeared to have simply aborted shortly after they were initiated. This circumstantial evidence suggests that, in addition to being waterlogged recently, these plants were also waterlogged near the V7 growth stage and stressed enough to cause the abortion of potential kernel rows very early in their development.

That may be more than you cared to read about, but the upshot of situations like this is that the potential loss in yield potential from aborted rows of potential kernels can be quite large. Using the traditional yield estimation formula (Nielsen, 2014) and a harvest population of 32,000 ears per acre, one can estimate the potential yield loss.

The number of harvestable kernels per ear is an important contributor to the grain yield potential of a corn plant. Severe plant stress during ear formation may limit the potential ear size, and thus grain yield potential, before pollination has even occurred. Optimum growing conditions set the stage for maximum ear size potential and exceptional grain yields at harvest time. The size of what will become the harvestable ear begins by the time a corn plant has reached knee-high and finishes 10 to 14 days prior to silk emergence.

Because ear initiation does not occur until about V5, stress prior to this leaf stage has no direct bearing on ear size determination UNLESS that stress eventually results in a severely stunted or weakened plant. This is particularly true for stress events that damage only the above ground portion of young seedlings without damage to the plants' growing point regions. Such damaged plants usually can recover well with little evidence of the damage some weeks down the road.

Severe stress from V5 to V12 that severely limits photosynthesis can directly interfere with ear size determination and result in fewer kernel rows (less likely) or few kernels per row (more likely) While such early stress can be important, recognize that severe stress that occurs shortly before to shortly after pollination has a far greater potential to reduce yield per day of stress.

-R.L.Nielsen. Ear Size Determination in Corn

For the sake of argument, I will further assume that a "typical" 18-row ear of corn would have no more than 30 harvestable kernels at a population of 32,000, while a "typical" 14-row ear often has upwards of 35 harvestable kernels. Given those assumptions, the potential yield of the healthier plants in the field would be about 216 bu/ac (18 x 30 x 32 divided by 80) while the potential yield of the stunted plants (assuming equal kernel weights) would be about.....196 bu/ac (14 x 35 x 32 divided by 80). Certainly, one can play various "what if" scenarios with the yield estimation formulas by changing harvestable kernel numbers and kernel weight (fudge factors), but nevertheless the closeness of the yield estimates is astounding.

Among the unknowns with such estimates are a) whether the eventual pollination in the stunted and delayed ponded areas will be successful, b) whether kernel abortion rates will be significantly higher with the stunted plants, and c) whether kernel weights will be compromised due to the stunted plant development. Additionally, there is also the lingering question about whether available soil N is adequate to sustain kernel development in the waterlogged areas of fields.

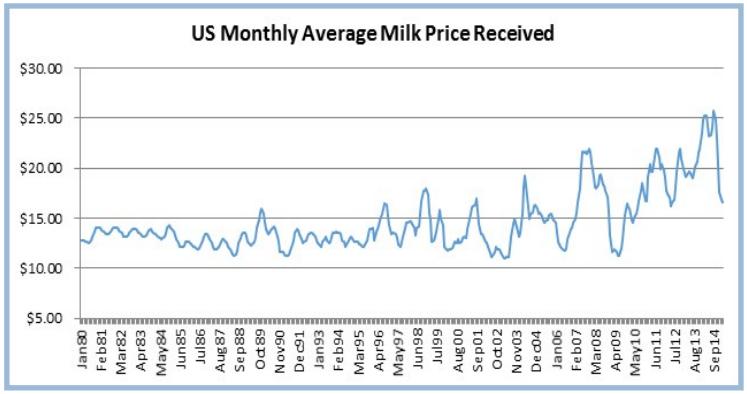
A lot of unknowns, but that is par for the course when faced with the extreme weather events like we are experiencing in 2015.

Food for thought. Take it for what it is worth. ⁂

Low Milk Prices? No Problem for Some

-Timothy Beck, Educator & Heather Weeks, Ext. Educator, Dairy Profitability-
Penn State Ext., College of Ag Sciences

What happened to all that cash from 2014? Farms that made a 2015 cash flow plan with the Penn State Extension "Know Your Numbers" program this winter came face to face with the reality of a breakeven year after one of record highs. "How," they asked, "could all that cash from 2014 just disappear?" Most farms used the high milk prices to make repairs to equipment and make capital purchases to replace machinery and equipment that were past repair. However, some farms also used this year to ensure that a 2015 year that couldn't realistically parallel the record 2014 year wouldn't be overwhelming.



Source: National Agricultural Statistics Service (NASS) of the U.S. Department of Agriculture. Accessed through www.farmdoc.illinois.edu/manage/uspricehistory/us_price_history.html updated 5/1/2015.

A known phenomenon exists in milk pricing: the three year price cycle has been proven to exist (Nicholson, 2015). A simple internet search pulls up articles from the fall of 2014 referencing record highs in U.S. milk prices. Only four months later the headlines turned to "Milk Price Bust Expected" and "USDA projects four years of declining milk prices." As futures markets started to show weakness last fall even while record milk checks were still coming in the mail, some farms were able to use those record prices to position themselves to weather the current downturn we are experiencing.

When prices are high, it is tempting to succumb to the attraction of the shiny and new. First and foremost, in order to position the farm business in a good situation for the inevitable downturn, avoid the temptation that the only tax management strategy is to increase capital purchases to avoid paying taxes. It leaves the farm vulnerable to cash deficits. Stay away from strategies that move money from the operating account to capital purchases. Instead, use that cash to pay down open accounts, vendor debt, credit cards, or lines of credit.

On the outflow side, prepaying expenses not only allows the business to capture prepayment discounts, but it reduces tax liability by using cash to cover future known expenses while not moving money to the capital fund. Then, the next time cash is needed from the operating fund to cover unexpected expenses or make up for milk income, it is available. A general figure is that for a low year, a farm needs six to eight months of cash on hand. In 2009 that accounted for about $1,000 per cow per year. In 2015 some experts estimate that number at around $500 per cow per year.

The goal is to stay solvent enough to weather the downturn and avoid major refinances after each low year.

On the income side of the equation, deferring income, including milk income, can be an option for farms that use a cash accounting method on their taxes.

These principles come back to the balance sheet. Paying down current debt (accounts payable, lines of credit) strengthens the current position of the farm. Farms that have historically used this strategy have a more positive balance sheet and history that makes lenders more amenable to loaning these farms money when it is really needed. A good relationship with the lender can be invaluable. Credit cards are not viable options for financing farm operations. If a piece of equipment is really needed, finance it with the bank to keep the operating account available.

Another strategy is to have a savings account separate from a farm checking to build a slush fund for low years. This tool is partly psychological: If it can't be seen, it's harder to spend. Cash kept in a checking account is easier to spend than cash kept in a separate account.

Finally, it is okay to pay taxes. While it is preferable to pay lower amounts, farms that never show a profit could send the wrong impression to lenders that may use the tax return as an indication of historical profitability.

If when assessing the farm's income and expenses from 2014 the budget just didn't show enough cash to use some of the strategies outlined here, then it is time to investigate where profitability leaks are occurring and make the necessary management changes. A good place to start is with a cash flow plan. After developing a plan, the farm is set to regularly track income and expenses for the dairy operation and other enterprises on the farm. Excellent farm financial accounting can sometimes be something as simple as having a good record keeping system and making sure it is up-to-date. ✹

Have You Made your 2016 Margin Protection Plan (MPP) Elections Yet?
-Betsy Hicks, Area Dairy Specialist-

Signup for MPP-Dairy takes place from July 1st through September 30th. All producers who want coverage for 2016 must register by completing form CCC-782 through FSA, elect a coverage level, and pay the $100 administrative fee by **September 30th**. If the operation participated in MPP for 2015, the operation's production history will be *increased by a factor of 1.0261*.

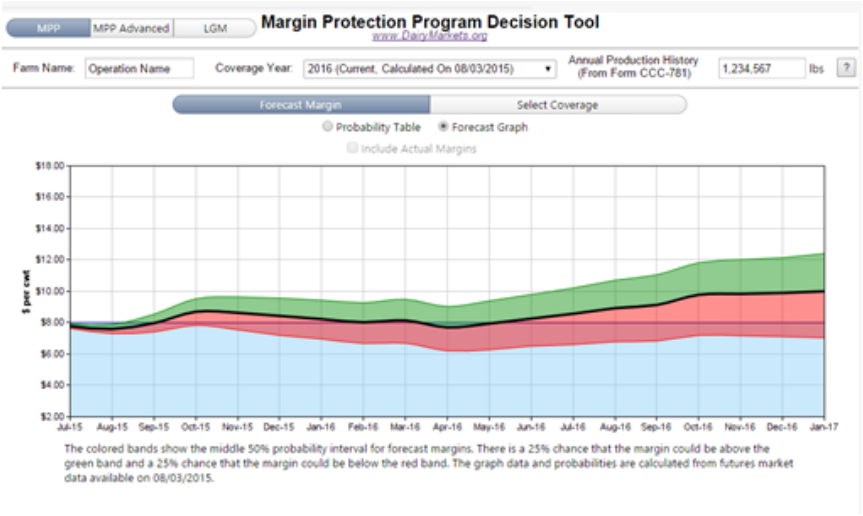
If you haven't visited dairymarkets.org and tried out the Decision Tool for MPP, take a few minutes to type it in. Your production history and the percent of production that you wish to cover are the only things you need to enter in the calculator. After doing this, you can look at the margin forecast through MPP and see what coverage level might have a payout for 2016, as well as the probability associated with that level.

If you didn't participate last year, you can still elect to register for 2016, you just will not be eligible for the bump in production history that participants from 2015 will be able to claim. You can compare different coverage levels against historical numbers as well to help make a decision.

There are other tools available on the dairymarkets.org website as well as podcasts, videos and printed materials giving information on forecasts, how MPP works, and other farm bill tools.

If you'd like help going over options, feel free to call one of the team and we can walk you through it! ⊙

Sign up by September 30th!



Hay Making Workshop

CNY Farm Supply ~ 3865 US-11, Cortland, NY

August 20th, 2015 ~ 6:30-8:30pm

Workshop Focus:

- ◊ **Machinery Overview for making Dry Hay**
- ◊ **Proper Adjustments for Equipment**
- ◊ **Small Square Bales & Large Round Bales**
- ◊ **Acid application & calibration**
- ◊ **Proper Storage of Dry Hay**
- ◊ **Caring for your Hay Stand**

Presenters::
Dave & Eric Law-CNY Farm Supply
Bucky VanPelt-VanPelt Farms
Janice Degni-Area Dairy& Field Crops Team

Registration Information:
Cost:-$10/person, additional farm member $5 each
To register-Call Jen Atkinson at 753.5078/email jma358@cornell.edu

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

60 Central Avenue
Cortland, NY 13045
Phone: (607) 753-5077

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CALENDAR OF EVENTS

Aug 19 — **Pasturing Alternative Forages**, Cobblestone Valley Farm, 2023 Preble Rd., Preble, NY 10:00am-3:00pm
NOFA-NY and Organic Valley CROPP Cooperative are excited to explore the use of alternative forages on Cobblestone Valley Farm with Paul and Maureen Knapp. Join us for a day focused on pasture management and tour the farm while learning from expert farmers Paul and Maureen Knapp. The Knapps will discuss their pasture management including what alternative forages they have found success with on their farm. For more information and registration details visit: http://www.nofany.org/events/field-days/pasturing-alternative-forages

Aug 20 — **Haymaking workshop**, CNY Farm Supply, 3865 US-11, Cortland, NY 6:30pm-8:30pm
Topics to include: Machinery overview for making Dry Hay, Proper Adjustments for Equipment, Small Square & Large Round Bales, Acid application & calibration, Proper Store of Dry Hay & Caring for your Hay Stand. Presenters include Dave&Eric Lawn, CNY Farm Supply, Bucky VanPelt, VanPelt Farms & Janice Degni, SCNY Dairy & Field Crops Team. Sign-in at 6pm with light refreshments. The workshop is $10/person, $5/each additional farm member. For questions call Betsy Hicks at 607.753.5213. To register call Jen Atkinson at 607.753.5078 or email jma358@cornell.edu

Aug 23 — **Sundaes at the Farm**, Lawton Jersey Farm, 431 Bridge St., Newark Valley, NY 12:00pm-3:00pm
Free Family Event! Visit a working farm, take a tour, and enjoy an ice cream sundae! There will be kids' activities, farm animals, farm vendors, music, 4-H booth and educational displays. For more information, contact Michelle Kline, CCE Tioga at 607.687.4020 Ext. 319 or via email at js328@cornell.edu

Aug 24 — **Soil Health Trailer**, Fay Benson's Custom Grazing Farm, 546 Cobb St., Groton, NY 10:00am-2:30pm
Demonstrations include: soil aggregate stability with rainfall simulator, use of penetrometers to measure compaction, active carbon test and grazing management strategies to improve soil health. Lite lunch provided. Events are complimentary, but please RSVP (Ellen Fagan at 753.5078 or email etf22@cornell.edu) for accurate food preparation.

Aug 26 — **Farm Safety & OSHA Regulations Workshop**, McMahon's E-Z Acres, Homer, NY 10:30am-3:00pm
Pro-Dairy's Karl Czymmek &NYCAMH's Jim Carraba will be there to lead the discussion and answer questions. The workshop will focus on: general farm safety, the Dairy Dozen& OSHA guidelines, unplanned OSHA inspections& what to do, update on OSHA LEP inspection, how to manage after the inspection& Fines/Fine Reductions. For more information or to register visit: http://scnydfc.cce.cornell.edu/ or register by calling Jen Atkinson at 753.5078 or email: jma358cornell.edu

Sept 17&18 — **Livestock Behavior Expert Dr. Temple Grandin to Visit Ontario County, NY**
World-renowned animal behavior expert Dr. Temple Grandin will speak at several locations in Ontario County, NY on September 17&18, 2015. Dr. Grandin is an ardent advocate for the humane treatment of animals and one of the most widely-recognized autistic professionals in the country. Conference details available at: www.happinesshouse.org
Register by September 10, 2015 at: http://nwnyteam.org/

Sep — **Corn Silage Workshops,** TBD