



## Cropping Notes

Janice Degni, Area Extension Field Crops Specialist.

*May 5. This may be the day that things really break loose. After a long, cold winter spring's work has been going on in spits and starts. Soil temperatures have remained cold up until now, kept low by regular rain and cool air temperatures. Although work has proceeded on the gravel soils there is much manure to be spread, tillage to do and seedings awaiting planting. Grass and alfalfa have been slow growing. Planting has been delayed across the country and early May is much later for the cornbelt than it is for us. I've selected the following articles from across the country in anticipation of things that we will deal with this planting season. As late as it is, one hopes we will soon be beyond the risk of cold stress in corn and beans but am including information since the weather may not be all clear.*

### Implications of a Late Spring on Grain Crops

*Greg Roth, Professor of Agronomy, Penn State*

The slow start this spring will have a ripple effect and delay planting, but that doesn't necessarily mean that yields will be negatively affected.

It's been a cool spring and this is having some impact on crop development activity but the overall impact on yields is uncertain. In general, years with delayed planting are often not associated with lower yields. Corn yields are more related to July and August precipitation than planting dates. I have seen several [analyses of planting dates and corn yields](#), and a recent one has been published by Darrel Good at The University of Illinois. He indicates that since 1971, corn was considered planted late in 13 years (more than 20 percent after either May 30 (pre 1986) or May 20), and the US yield was above trend line in eight of those years and below trend line in five of those years. Just because we are getting off to a slow start, does not mean we have impacted our yield potential.

Given the weather forecast, it looks like planting progress will be slow through next week. As the bulk of corn planting moves into May, I suspect we will see some delays in soybean planting as well or some situations where both corn and soybean planting are happening at the same time. This could make for some long days for everyone. Given a choice, I would prioritize corn over soybeans in cool soils since we often have some stand loss with soybeans under these conditions.

Another issue could be the decision to switch cropping plans. In Good's article he suggests that often differences in planting compared to intentions are small in late springs. I suspect we won't see much crop switching due to the later spring either. Much of our crop is based on feed needs and historically it seems like crop acres have been fairly stable in these situations. This year we are already forecast to plant 9% more soybeans than last year, so there already has been some switching and it might be tough to do much more.

Finally our small grain development is behind and this may impact forage harvest dates and the potential for double cropping. Small grain development is a function of heat units in both the fall and the spring, so later planted fields are lagging the most in development. I don't see any downside at this point to yield potential of these crops and the cool and now wet spring can actually be helping in terms of tiller development. I have seen some frost damage on leaf tips but it's probably too early to have any significant effects.

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# MAY 2014

Cornell Cooperative Extension South Central NY Dairy & Field Crops Program

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# WELCOMING...



## **Betsy J Hicks, Area Dairy Specialist**

Betsy is a native of western New York and was raised on her family's beef and apple farm. There she raised beef cattle and dairy replacement heifers along with participating in 4-H. Her love of livestock led to her major in Animal Science at SUNY Cobleskill, focusing on dairy cattle and nutrition. During that time she worked on several commercial dairies as herdsman, gaining firsthand experience of many of the challenges that producers face. She continued her education at the University of Illinois, completing her Masters Degree in Nutrition in 2008. After that Betsy moved back to NY, settling in the Cortland area. For the last five years, she has provided nutritional consulting to a variety of dairy farms in Cortland, Madison and Chenango counties. Betsy lives in McGraw with her husband, Jesse, on the farm that has been in the Hicks family for over 200 years. They raise registered Angus cattle and enjoy spending time with their family, hunting, snowmobiling, their two draft horses and three dogs. She can assist you with nutrition, milk quality, troubleshooting cow comfort issues, calf and heifer management, records management and efficiencies on farm.

We are pleased to provide you with this information as part of the Cooperative Extension Dairy and Field Crops Program serving Cortland, Chemung, 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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# Milk Quality Premiums – What Are You Waiting For?

Betsy Hicks, Area Extension Dairy Specialist

When milk prices are low we hear producers ask, “How do I earn more money in my milk check?” Often, decreasing somatic cell count (SCC) to take advantage of milk quality premiums is one of the first places we look. When milk prices are high, however, this question is hardly ever asked because everyone is enjoying the ride. At high milk prices though, confronting SCC issues can yield to be very fruitful not only because of milk quality premiums, but also because of the increase in milk yield that occurs when SCC drops. Starting the process when milk prices are good ensures that you will be ahead of the game when prices are falling.

Herd Average	No. cows	CWT/month	Milk price	Total income/month	total income/year
65 lb	100	1950	\$ 23.00	\$ 44,850.00	\$ 538,200.00
66 lb	100	1980	\$ 23.00	\$ 45,540.00	\$ 546,480.00
			Difference	\$ 690.00	\$ 8,280.00
	Premium	1980	\$ 0.30	\$ 594.00	\$ 7,128.00
			Total Increased Revenue	\$ 1,284.00	\$ 15,408.00

The table below estimates production losses across an entire lactation using DHI SCC and compares these losses against a score of 2. First lactation animals experience slightly lower losses, but with mature cows, the losses spread across a lactation can be quite extreme.

DHI-SCC Score	Average SCC	Lactation 1*	Lactation 2*
0	12,500	--	--
1	25,000	--	--
2	50,000	--	--
3	100,000	200	400
4	200,000	400	800
5	400,000	600	1200
6	800,000	800	1600
7	1,600,000	1000	2000

\*decrease in yield (lb/305d) as compared to DHI-SCC Score 2 (Raubertas, 1982)

## Farm Example

A 100 cow farm that thinks they are doing well at an average of 320,000 SCC can really increase milk revenue. First let's look at production losses, broken out by lactation.

	No Cows	SCC	Milk Loss Per Lactation (lbs)
First Lactation Cows	40	200,000	400
Mature Cows	60	400,000	1,200
Weighted Average		320,000	880

For 100 cows this is 88,000 lb per year lost, or at \$23/cwt milk, \$20,240 in reduced milk revenue. To set expectations, however, it is not really fair to compare to a 50,000 SCC. Let's look at the same farm, this time by cutting SCC in half by each lactation group.

	No Cows	SCC	Milk Loss Per Lactation (lbs)
First Lactation Cows	40	100,000	200
Mature Cows	60	200,000	800
Weighted Average		160,000	560

For the same 100 cows, this is only 56,000 per year lost, or at \$23/cwt milk, \$12,880 in reduced milk revenue, a difference of \$7,360 per year in added milk revenues. This difference is solely from milk pounds realized by lowering somatic cell count. Any quality premiums would be in addition to this number, and can range from \$.20-.50 per cwt depending on quality level achieved.

So let's look at one more example using Quality Premiums. Say the farm above saw a reduction in SCC from 320,000 to 160,000 and only saw a 1 lb increase in milk, but received an additional \$0.30 per cwt for their milk quality. Think it's not worth the trouble?

## How Do I Improve My Somatic Cell Count?

### Does your herd have contagious pathogens?

Mastitis is an infection of the mammary gland, and in order to treat or ultimately prevent mastitis and effectively lower somatic cell count, the producer must identify how the infection got there. Generally, mastitis is split up into two groups, environmental pathogens and contagious pathogens. Without knowing if a farm has contagious mastitis – mastitis that is spread from cow to cow – that farm will not be effective in controlling it. Environmental mastitis, on the other hand, is caused by bacteria that live in the cows' environment – think bedding, hygiene, etc – and is not spread from cow to cow. If a farm is just starting to try to control mastitis, bulk tank sampling may be an inexpensive way to start to identify which pathogens the farm has. A sample containing *Staphylococcus aureus*, *Streptococcus agalactiae* or *Mycoplasma* species indicates contagious pathogens. Other Strep species and Coliform bacteria such as *E. coli* and *Klebsiella* indicate environmental pathogens.

### Which cows have mastitis?

An inexpensive way to determine the presence of infection on each cow is to use the California Mastitis Test, or CMT. A CMT kit can be purchased for around \$20, and comes with the paddle to perform the cow-side test, as well as the reagent which comes in a concentrated form. The kit comes with enough reagent to do about 350 samples. Milk from each quarter is stripped into a corresponding spot on the CMT paddle. When an equal amount of reagent is added, the milk will coagulate and form a gel-like substance in the presence

(Continued on page 4)

of an infection. The consistency of the gel indicates how severe the infection is. In a matter of seconds, the producer can identify which cows may be struggling with mastitis. The next step is identifying the pathogen causing the infection. Sampling and culturing every cow each time indications of mastitis are seen can be extremely costly. However, if an outbreak of contagious mastitis is suspected, this may be the best route to take until it is under control. Otherwise, pooling cow samples to be cultured can be more cost-effective. Other methods of identifying problem cows include monthly DHI testing for somatic cell count as well as sampling cows at dry off.

### **Do you have a set milking routine?**

In order to control mastitis, producers need to manage multiple areas. The environment where the cow is housed is important, as well as the facilities she is milked in and the way she is prepped and milked; even whether or not she has been vaccinated plays a role. Cleanliness is paramount to the control of mastitis, but many farms with extremely clean cows still struggle with mastitis. The other factors are just as important. Of these, proper milking routine is essential; cows are creatures of habit and without a proper and consistent routine, the best quality milk is not possible.

The first step to any routine should be to always wear gloves. Bacteria live on hands and can very easily be transferred from one cow to another. Next, a proper predip solution should be used, and should be considered as a disinfectant. Without a proper disinfecting solution – or enough contact time of that solution – we might as well dump the predip on the floor. Cleaning teats effectively, including the teat end, takes time and should be done to every cow the same way every milking. Cows need proper stimulation to have effective milk let down. Forestripping can and should be a part of this routine and can occur before or after applying disinfectant. Not only is forestripping an important part of stimulation, but it also gives the milker a chance to observe the milk. In addition, most of the somatic cells in milk are found in the first three strips of milk.

Timing is also very important during milking; the milker should aim to apply units 90 seconds after first stimulation.

Applying units too early or too late can affect how well the cow lets down. After applying, units must be aligned correctly to allow for milk flow and to minimize liner slippage. Any slippage allows air and bacteria to enter the teat end, effectively ensuring the cow to have to deal with bacteria she otherwise would not have encountered. After the cow has finished giving milk, a proper teat dip should be used in a separate and clean dipper cup. This supplies a barrier to pathogens while the teat end is still open. When it comes to applying any teat dip, always choose a dipper over a



sprayer. With a dipper, less dip is used and proper contact is achieved.

### **What about dry periods?**

By starting new lactations off on the right foot and considering the impact of heifers and dry cows, a producer can make drastic changes within a year's time. The two weeks before a cow calves is a high risk time for infection to occur in a dry cow or pregnant heifer (as well as the two weeks after a cow has been dried off). Limiting fresh mastitis events should be a major focus for every producer. A mastitis event at calving can be detrimental in so many ways – it leaves a less than desirable quality of colostrum, makes the cow vulnerable to other disease, further compromises her already compromised immunity, and ensures less milk in her lactation.

For growing heifers, the producer should make sure there is no cross-suckling as it can lead to mastitis even before they have their first calf. For mature cows, ensuring a stable dry period includes proper nutrition, vaccination, a clean place to be housed, and proper treatment at dry off. Producers should also make sure that fresh cows are milked using a clean unit with liners that are in good condition. So many times, the bucket milker is the last thing producers think about, but is the first thing fresh cows are exposed to. Preventative maintenance in the dry period and through freshening is the best way to limit the incidence of mastitis and start a productive lactation.

### **Other things to keep in mind**

Additional problem areas to consider are maintenance of milking equipment and its effect on teat ends. To maintain teat ends, proper vacuum needs to be ensured. Over milking cows or excessive manual milking can also lead to stressed teat ends. Furthermore, rubber parts need to be maintained and changed in a timely fashion or when worn because bacteria can live in torn or worn rubber parts and can all contribute to pathogens that the cow needs to avoid.

### **Checklist for Lowering Somatic Cell Counts**

- Wear gloves while milking
- Strip cows before milking to observe milk and reduce SCC
- Use a dipper instead of a sprayer for teat dip
- Check vacuum levels on a regular basis
- Inspect milking equipment regularly and replace worn and torn parts
- Identify problem cows with DHI testing, CMT, culturing or any combination of these
- Vaccinate at dry-off and maintain clean housing for pre-fresh cows and heifers. ⚡

# Risk Management Updates

## Important Crop Insurance Deadlines in NY State for 2014

- Final planting dates for Corn and Soybeans- Tuesday 6/10/14
- Final acreage reporting dates for Corn and Soybeans- Tuesday 7/15/14

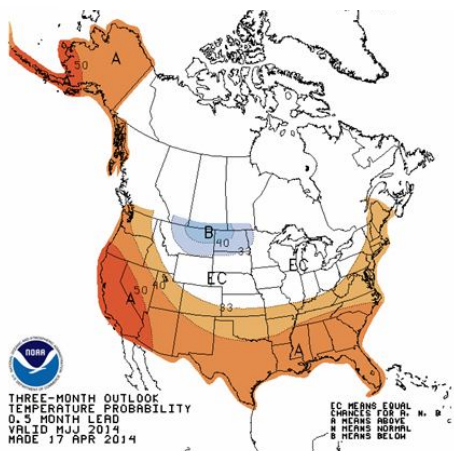
## Climate Outlook for Late Spring and Early Summer

The National Weather Service Climate Prediction Center provides maps that show areas of the country that are expected to experience departures from normal for temperature and precipitation during the coming months.

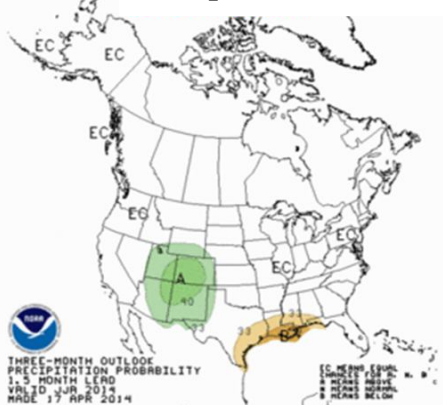
The next Three-Month Outlook reported (May/June/July 2014) shows our region in South Central NY (Cortland, Tioga, Chemung, Tompkins counties) narrowly avoiding a marked region to the south and east that they predict *may* experience higher than average temperatures. There are no predictions for higher than average rainfall for the next reported period June/July/August 2014.

Shaded areas are predicted to have higher than average conditions.

### Temperature Outlook



### Precipitation Outlook



*Source: National Weather Service Climate Prediction Center, Monthly & Seasonal Color Outlook Maps*

# Grain Marketing

Janice Degni, Area Field Crops Specialist

Nov. 4, 2013 byline from AgWeb powered by Farm Journal:

## **2014 Outlook: Prepare for a Stagnant Corn Market**

*Is there any hope for corn prices next year? Market analysts Bob Utterback and Greg Wagner offer their thoughts on five wild cards to watch. . .*

The keys to grain marketing are to remember that no one can predict the future and no matter what marketing decision you make it will be wrong. With that behind you, you can make profitable grain marketing decisions. Regardless of supply and demand, acres planted, unrest across the globe and the strength of the dollar, rule number one is to calculate your cost of production. Even variable costs on the back of an envelope is better than nothing. We are talking about your livelihood and annual income so a fuller analysis including fixed costs (machinery, storage, etc.) and depreciation will give you a more reliable number. There are some excellent spreadsheets to help you with that. I like Ohio State University's, <http://aeede.osu.edu/research/osu-farm-management/enterprise-budge> because they are fairly simple and straight forward. Illinois is thorough, [http://www.farmdoc.illinois.edu/manage/newsletters/fefo03\\_13/fefo03\\_13.html](http://www.farmdoc.illinois.edu/manage/newsletters/fefo03_13/fefo03_13.html). Illinois Crop Budget projections in a report format [http://farmdoc.illinois.edu/manage/2013\\_crop\\_budgets.pdf](http://farmdoc.illinois.edu/manage/2013_crop_budgets.pdf).

Once you know your break even cost you can lock in a forward contract price without worry because you know that you locked in at a profit. You may not hit the highest high, but you won't have to accept the bottom of the market either at harvest time. Because memories can be short and the painful ones shorter, last year's low grain prices during harvest are more typical than the prior 2 years high prices at harvest. As granaries fill up at harvest, they don't want more grain because they don't have anywhere to put it so there is little incentive to pay a competitive price (basis will increase sending a message that the market does not want more grain).

We've seen price rebound in corn and beans this winter. Corn prices are holding because planting has been delayed and is progressing slowly in the Midwest. Intended ac to be planted to soybean are high. Prices can change rapidly depending on perception of conditions. Don't miss an opportunity to market some of your crop at a profit with a cash contract. A cash contract locks in the price to be paid for an amount of grain delivered at a given time. Basis may or may not float until the day of sale depending on the contract that you sign. Basis is simply the difference between the CBOT price and the local market price. If you want more information on cash forward contracts or marketing in general or would like to be added to the grain marketing group list for meeting notices please contact me. – Janice

*(Continued on the calendar of events page 12)*

Visit:

[http://www.cpc.ncep.noaa.gov/products/predictions/multi\\_season/13\\_seasonal\\_outlooks/color/churchill.php](http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/churchill.php) to follow climate predictions from the National Weather Service Climate Prediction Center

# Silvopasture will be used to reduce heat stress and expand grazing area on this custom grazing farm this spring.

Fay Benson – Small Dairy Technologies Educator and Custom Heifer Grazer

I first looked into the practice of silvopasture after reviewing pedometer data collected from the heifers I custom graze. Animal movement decreased dramatically as temperature went up. This information corresponds to information contained in an NRCS fact sheet showing that there can be a drag of 1.25 lbs/day during some heat stress periods. Since one of the factors my client judges my performance is the heifers need to average 1.5 to 1.75 lbs per day. Every day I lose that level of gain means another day I have to make that up. Silvopasture seemed an easy way to reduce heat stress.

Part of my farm's income is from harvesting the excess hay my pastures produce in early summer. The price of hay has risen dramatically in our area as with other areas. I have some areas of my farm that are occasionally wet and have grown up to hard wood forest and overgrown scrub trees and bushes. My thought is that by adding some of these areas to my grazing system through silvopasturing it will allow me to harvest more hay from my other pastures and at the same time still grow quality hardwoods for sale.

The Planning for the addition of silvopasturing to my system started last year when I heard Brett Chedzoy the Natural Resources Extension Agent for Schuyler County give a talk on the practice. In addition to being a trained forestry educator Brett has a herd of Black Angus which allows him to practices what he preaches about Silvopasturing. Brett held a pasture walk at his farm in Watkins Glen NY this past summer. The main objective is to get enough sunlight through the canopy to grow grass but to limit the sunlight so that there is a cooling effect for the animals. To do this Brett uses a "Basal Area Estimator" this is a small piece of plastic with a square whole

punched in it to make a 1 inch by 1.5 inch opening. He holds it 20 inches from his eye and counts the trees that fill the opening. This gives him an estimate of the total Basal Area or the number of square feet of stumps at 4 feet high in an acre.

The area I was going too thin to implement silvopasturing had 120 square feet of basal area. I will need to reduce that by half or to 60 square feet of basal area.

## Side Bar from Cornell's "Forestry Connect" Web page:

- ✓ Look for on-line resources. There are a number of temperate agroforestry sites with good articles and information on silvopasturing, though much of the information will need to be extrapolated to your own situation. The "Guide to Silvopasturing in the Northeast" and other silvopasture resources are currently available under the "publications" section of <http://forestconnect.info>
- ✓ Develop woodlot management and animal husbandry skills independently, and then gradually look for ways to symbiotically combine the two systems in a context appropriate for your own property
- ✓ Seek out local silvopasture practitioners to see what has worked for them. To ask question and share experiences with silvopasturing, visit: <http://silvopasture.ning.com>
- ✓ Work with a forester who is willing to help you learn and experiment. Expect some resistance at first when you mention the word "silvopasturing", but foresters are trained to achieve landowner goals. They may lack knowledge on the livestock side of the equation, but their expertise in vegetation and forest management will be invaluable.

The knowledge that was new to me was the forestry aspect of the practice. This is why it is important for a farmer who is knowledgeable about animals and grazing should work with a forester to implement the practice. Selection of the trees to thin and the method to use should come from someone who is trained. If silvopasturing is implemented properly the farmer will be able to still harvest timber of equal or greater value.

The fence line has been cleared for my first 5 acre paddock. My goal is to add 5 acres each year for 4 years. When the system is in place the heat stress periods my heifers used to encounter will not cause the weight gain drag and discomfort before they had access to the new paddocks. The additional grazing areas will add to my farms production and I can choose to increase the number of animals I graze or increase the amount of hay I harvest.

## Side Bar #2 Keys to starting Silvopasture:

- Measure the stump areas of your area with a Stump Basal Estimator. The goal is to reduce the Basal Area to 60 square feet per acre.
- Once the area thinned to the desired level. Your fences should be in place to allow immediate introduction of the animals. An area that is cleared and then left for even part of a year will result in the rapid growth of brush and other undesirable grazing plants.
- The hoof action is an important part of the initial site preparation but care should be taken to limit residency to 12 hours every 45 days. Once the grazing sward has been established residency can be increased.

Seeding grasses shouldn't be needed but can be to speed up the transition from forest to grass production. ☺

## Tentative Agenda

# grasstravaganza!

## 2014

Pasture Soil Health Creates Wealth • July 17-19, 2014 at Morrisville State College

### Thursday, July 17, 2014

- 2:00-6:00p **Registration & Check-in**  
*Student Activities Building (STUAC)*
- 6:00-9:00p **Dinner & Jim Gerrish**  
*Location TBD*  
*"Adventures in Grazingland"*

### Friday, July 18, 2014

- 7:30-8:45a **Continental Breakfast, Registration & Trade Show**  
*STUAC Lobby*
- 8:45-9:15a **Welcome**  
*STUAC Theater*
- 9:15-10:15a **Speaker - Ray Archuleta**  
*STUAC Theater*
- 10:15-10:30a **Break & Trade Show**
- 10:30-11:40a **Speaker - Ray Archuleta**  
*STUAC Theater*
- 11:40-12:00p **Overview of Soil Health Stations**  
*STUAC Theater*
- 12:00-1:30p **Lunch**  
*Seneca Dining Center*
- 12:00-1:30p **Break & Trade Show**  
*STUAC Lobby*
- 1:30-5:00p **Soil Health Stations**  
*MSC Dairy Complex*  
*Bus Departs at 1:30p*
- 5:00-6:00p **Break & Trade Show**  
*STUAC Lobby*
- 6:00-6:30p **Reception**  
*Location TBD*
- 6:30-8:30p **Dinner & Speaker**  
*Seneca Dining Center*

### Saturday, July 19, 2014

- 7:00-8:00a **Registration & Trade Show**  
*STUAC Lobby*
- 7:00-8:00a **Breakfast**  
*Seneca Dining Center*
- 8:15-8:30a **Welcome**  
*STUAC Theater*
- 8:30-10:10a **Speaker - Jerry Brunetti**  
*STUAC Theater*  
*"The Community of Ecology: Our Kindred Connections from Microbes to Mankind"*
- 10:10-10:25a **Break & Trade Show**
- 10:25-12:05p **Speaker - Jim Gerrish**  
*STUAC Theater*  
*"From the Grass Roots Up"*
- 12:05-1:30p **Lunch & Break**  
*Seneca Dining Center*
- 1:30-4:00p **Farm Tours**  
**Dairy:** Converting row crops to pasture: The story of a seasonal 400 cow grazing dairy.  
**Equine:** Comparing the effects of over-grazing and presenting best management strategies.  
**Diverse Livestock:** Showing the synergy in management of diverse livestock, plants and soil health.
- 4:00p **End of Conference**



Visit <http://grasstravaganza.morrisville.edu>  
or call Sarah Mazza at (315) 684-6076 for  
more information.



# New Crop Herbicide Products for 2014

## CropWatch – University of Nebraska-Lincoln

### Corn Herbicides

**Callisto® GT** [glyphosate (34%) + Mesotrione (3.4%)]. It is a new premix from Syngenta for post-emergence weed control in Roundup Ready corn. Do not apply more than one time per year and do not apply more than 2 pints/acre per year. Do not harvest forage, grain or stover within 45 days after application. EPA Reg. No. 100-1470.

**Instigate™** [rimsulfuron (4.17%) + mesotrione (41.67%)]. Instigate is a new premix from DuPont for pre-plant and pre-emergence control of broadleaf and grass weeds in corn. It can be applied up to 14 days prior to planting or before corn emergence. It can be applied within a rate range of 5.25 to 7 oz/acre before corn emergence. EPA Reg. No. 352-873.

**Lexar® EZ** [S-metolachlor (19%) + atrazine (18.61%) + mesotrione (2.44%)]. Lumax EZ [S-metolachlor (27.1%) + atrazine (10.2%) + mesotrione (2.71%)]. Lexar EZ and Lumax EZ are products of Syngenta for pre-emergence control of annual grasses and broadleaf weeds in corn and grain sorghum. The application rate of Lumax EZ is 2.75 to 3.25 quarts/acre. For Lexar EZ it is 3 to 3.5 quarts/acre. EPA Reg. No. 100-1414 for Lexar EZ and 100-1442 for Lumax EZ.

**Realm™ Q** [rimsulfuron (7.5%) + mesotrione (31.25%)]. Realm Q is a new premix herbicide from DuPont for post-emergence use in field corn. It contains a safener (isoxadifen) and may be applied at 4 oz/acre to emerged corn through 20-inch or V7 corn, whichever is more restrictive. Realm Q provides selective post-emergence control of annual grasses and broadleaf weeds. It may be tank-mixed with glyphosate when used in glyphosate-tolerant corn or glufosinate in LibertyLink corn. MOA: rimsulfuron is an ALS inhibitor (Group 2) and mesotrione is an HPPD inhibitor (Group 27). EPA Reg. No. 352-837.

**Solstice™** [mesotrione (38.52%) + fluthiacet-methyl (2.2%)]. This FMC product contains the active ingredients of Callisto and Cadet. It can be applied post-emergence in corn for selective control of broadleaf weeds. For effective control of grasses, it can be tank-mixed with other grass herbicides. EPA Reg. No. 279-3461.

**Zemax™** [S-metolachlor (36.8%) + mesotrione (3.68%)]. Zemax is a Syngenta product containing the active ingredients of Callisto (mesotrione) and Dual II Magnum (S-metolachlor). The double mode-of-action herbicide can be applied from 14 days early pre-plant up to 30-inch corn.

Zemax is also used in grain sorghum for pre-emergence control of many annual grass and broadleaf weeds. EPA Reg. No. 100-1410.

### Soybean Herbicides

**Flexstar® GT 3.5** [fomesafen (5.88%) + glyphosate (22.4%)]. Flexstar GT is a new premix herbicide from Syngenta for pre- and post-emergence control of certain grasses, broadleaf, and sedge weeds in soybean. A maximum of 3.5 pts/acre may be applied in alternate years. Fomesafen is a PPO inhibitor (Group 14) and glyphosate is an EPSPS inhibitor (Group 9). EPA Reg. No. 100-1385.

**OpTill® PRO** [saflufenacil (17.8%) + imazethapyr (32%) + dimethenamid-P (63.9%)]. It is one of the Kixor-based herbicides from BASF. This co-pack features three modes of action in Sharpen, Pursuit and Outlook herbicides (Group 2, 14, and 15). It provides both contact burndown and residual pre-emergence weed control in soybean. EPA Reg. No. 7969-332.

**Pummel™** [metolachlor (5 lb ai/gal) + imazethapyr (0.25 lb ae/gal)]. Pummel is a new product from MANA to be used for preplant or preemergence control of annual grasses and many broadleaf weeds in soybeans. The use rate ranges from 1.6 to 2 pints/acre, depending upon soil type and organic matter. EPA Reg. No. 66222-251. **(Not for use on Long Island)**

**Torment™** [fomesafen (2 lb ae/gal) + imazethapyr (0.5 lb ae/gal)]. Torment is a new product from MANA that can be applied preplant, preemergence or early post-emergence to control broadleaf and grass weeds in soybeans. The use rate is 1 pint/acre when soil-applied and 0.75 to 1 pint/acre with a minimum 15 GPA carrier volume when applied post-emergence. EPA Reg. No. 66222-249. **(Not for use on Long Island)**

### Herbicides Labeled for Use in Multiple Crops

**Warrant®** [acetochlor (33%)]. Warrant is an encapsulated formulation of acetochlor from Monsanto. It is now labeled for pre-plant, at-planting, or pre-emergence to soybeans and sorghum at 1.25 to 2 quarts/acre depending on soil texture and organic matter content. It can also be applied post-emergence to soybean and sorghum. EPA Reg. No. 524-591. **(Not for use on Long Island)**

Compiled by: Amit Jhala, Weed Management Specialist, Lowell Sandell, Weed Science Extension Educator, Stevan Knezevic, Integrated Weed Management Specialist, Greg Kruger, Cropping Systems Specialist and Robert Wilson, Weed Management Specialist, University of Nebraska-Lincoln April 4, 2014



## Factors Influencing Cold Stress in Corn and Soybean

### CropWatch, University of Nebraska-Lincoln

Warmer weather allowed for field work and planters to start rolling the last few weeks. Corn planting progress in Nebraska was at 4% as of April 20, according to USDA's National Ag Statistic Service, and will most likely jump by the next report.

Producers may be wondering how cold soil temperatures affect newly planted corn and soybean seeds. Ultimately, neither corn nor soybeans should be damaged from imbibitional chilling if soil temperatures do not dip into the low 40s within 48 hours of planting. The following provides additional information to consider.

### Imbibitional Chilling Injury of Corn

When corn seeds imbibe (take up) water, cell membranes stretch and cells expand. When a damaged cell membrane rehydrates, it may not return to its normal shape and size. This can create a "leaky" cell. Water is at its densest at about 39°F so when cold water is imbibed, it may result in additional membrane damage. These ruptured membranes may occur in the cell walls and in the mitochondria. In the plant this action may disrupt the embryo/endosperm enzymatic conversion to energy, but mostly results in leakage of cell solutes and sugars. This, in turn, is likely to reduce growth rate and interfere with growth of the emerging seedling.

- Debate exists about what specific temperature and timing causes imbibitional chilling. However, corn plants that imbibe cold water (in the low 40s) in the first 48 hours after planting undoubtedly are affected.
- Planting when soil temperatures are above 50°F alleviates concerns of imbibitional chilling affecting corn emergence. Some scientists suggest that corn will not be injured at soil temperatures as low as 41°F; however, there is certainly some risk of injury from imbibitional chilling at those low temperatures.
- Some inbred lines (seed parents) are clearly more susceptible than others, and the seed industry has been actively eliminating the most sensitive ones from use. However, if environmental conditions are extreme, many fairly tolerant parents may still show damage—imbibitional chilling is a physical phenomenon that can override biology and genetics.
- For best results, begin planting corn when soil temperatures are in the high 40s and the short-term forecast calls for warm days that will continue pushing

soil temperatures higher. If soil temperatures are in the high 40s and the weather forecast calls for cold wet conditions within the next 48 hours — that will likely reduce soil temperatures, so refrain from planting.

### How Cold Stress Affects Soybean

Soybean germination consists first of a very fast uptake of water (imbibitional phase) followed by a much slower uptake of water (osmotic phase). Chilling during the first phase can cause severe problems because the imbibed water is needed to rehydrate the cotyledons and embryo to the point that cell membranes become functional. Cold temperatures interfere with proper hydration of those membranes.

The imbibitional phase is typically not very long (less than 24 hours) and can occur with relatively little soil moisture since the seed is dry at planting. Thus, getting a cold rain within 24 hours after planting can lead to chilling injury in soybean and thus lower stands. A study by UNL researcher W.J. Bramlage and colleagues showed that when the soybean seed coat was removed, imbibition injury occurred within 30 minutes. With a seed coat, imbibition is slower and a longer exposure is needed before chilling injury occurs.

- Chilling injury is likely greater if soil temperatures were cold (less than 50° F) at planting rather than becoming cold 24 or more hours after sowing. Chilling injury occurs with temperatures of less than 50°F within 24 hours of planting; germination failure and seedling death occur at soil temperatures around 40°F. The longer the seed is in the ground at warm soil temperatures before cold temperatures occur, the less chance there is for chilling injury.  
*Bottom line:* Plant your soybeans if you think the soil temperatures won't get cold (less than 50°F) for at least 24 hours. If you planted two or more days before the cold rain, there should be no imbibitional injury due to cold temperature.
- During the second phase of germination, the fully functional membranes (after imbibitional hydration) create an osmotic situation in which water diffuses into the living cells. Osmotic water uptake is slow with cold temperatures. Chilling during this phase causes little direct injury to the germinating seedling. Cold temperatures will, however, slow emergence.
- Saturated soil with cold temperatures significantly hurt germination, thus fungicide seed treatments are recommended if planting in April or early May.

### Be Aware of Soil Moisture Content

More important than cold soil temperatures after

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imbibitional water uptake is the soil moisture content. Cold soil delays the time between germination and emergence, but cold soil plus saturated soil conditions can substantively reduce soybean and corn emergence because soil-borne pathogens thrive in water-saturated soil. Since the period of seedling germination to emergence takes longer due to cold temperatures, those pathogens will have more time to infect the soybean seedling cotyledons and access their carbohydrate, protein, and lipid reserves. Soybean seedlings need those cotyledon reserves to live on until the unifoliolate leaves start photosynthesis and form more carbohydrates. This is why fungicide seed treatments are crucial if planting soybeans in April or early May and in cold, wet conditions. Ultimately, water-saturated soil with cold temperatures reduces both soybean and corn germination.

### "Optimum" Planting Dates

Our use of the terms "optimum" planting dates here implies that both corn and soybean yield responses to planting date is a curve — lower yields early, an optimum date, followed again by lower yields. Many producers, however, see yield responses as a downward sloping straight line; thus, the later they plant, the lower their probable yields. In fact, planting before that "optimum" date incurs the likelihood of yield loss, at least in some environments. At this time year, soil temperature, moisture, and condition at planting as well as the weather that follows planting — plus all the other variables and unknowns — will dictate the optimum planting date. We determine that by looking in the rear-view mirror.

### Additional Considerations and Recommendations

Corn hybrids and soybean varieties vary in their characteristics, including cold tolerance and resistance to fungal pathogens. Timing and duration of weather events and other random environmental factors can lead one to draw different conclusions about which hybrid or variety was best. Sometimes the risks we take with earlier planting are exactly that — risks — and sometimes loss will occur as a result.

If you have early planted corn or soybeans, it will be important to scout those fields early for any potential problems since poor stands may need to be replanted. ⚠

Greg Kruger, UNL Extension Cropping Systems Specialist, West Central REC

Jim Specht, UNL Professor of Agronomy and Horticulture

Roger Elmore, UNL Extension Cropping Systems Agronomist

Jenny Rees, UNL Extension Educator

Tom Hoegemeyer, UNL Agronomy and Horticulture Professor of Practice

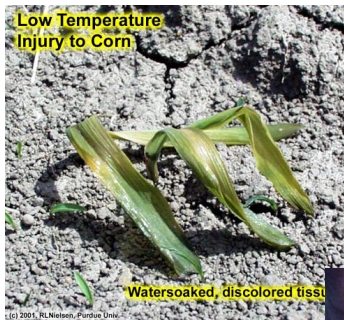
## Symptoms of Low Temperature Injury to Corn and Soybeans

R.L. (Bob) Nielson. Corney News Network

### Low temperature injury to VE - V1 corn

1 to 2 days after freeze:

Droopy, discolored leaves



Watersoaked, discolored leaf tissue



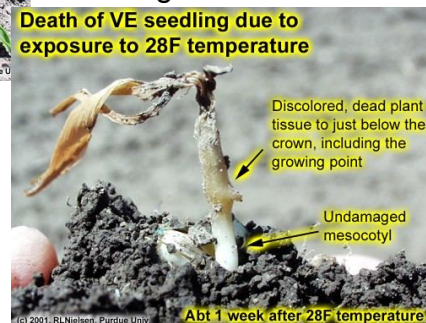
Appearance of growing point region

About 1 week after freeze:

Seedling survival



Seedling death



URL: [http://www.kingcorn.org/news/articles.01/Frost\\_Corn\\_Soy-0418\\_Gallery.html](http://www.kingcorn.org/news/articles.01/Frost_Corn_Soy-0418_Gallery.html)


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## Check for Weeds in Winter Small Grains

*Paul O. Johnson, iGrow South Dakota State University Extension*

Winter wheat and rye are off to a slow start with the cooler than normal temperatures. At the same time, winter annual weeds are growing fast despite cool temperatures. When we look at winter annual weeds, normally we include pennycress, tansy mustard, shepherd's purse, green flower pepperweed, and several more winter annuals that get referred to as part of the mustard family. These weeds start out as a rosette in the fall and come on early in the spring. They grow well in cool temperatures and bolt, and flower, early in the season. Best control of these weeds is either before they start to flower or when it is apparent that some will be flowering in the next couple of weeks. Rye with normal growth does a very good job of shading the ground and keeps the weeds from developing, however in cool conditions this is not always the case.

With our current cool conditions, selection of the right herbicides is very important. Some herbicides can cause increased injury to the crop in cool conditions. Normally it is desirable to reach at least 50 degree weather to avoid this possibility. The Sulfonylurea herbicides ("SU" chemistry) are the main concern in cool temperatures. If bromoxynil is going to be used make sure there will not be a frost for at least three days following application. Always check the label of the product used to see if there are additional restrictions that need to be followed. Copies may be obtained at the iGrow store under downloads, or contact your closest Regional Extension Center. 

## Is there any value to starter fertilizer on soybeans?

Dorivar Ruiz Diaz, Nutrient Management Specialist,  
Kansas State University

Soybean is a crop that can remove significant amounts of nutrients per bushel of grain harvested. Because of this, soybeans can respond to starter fertilizer applications on low-testing soils, particularly phosphorus.

In many cases, corn shows a greater response to starter fertilizer than soybean. Part of the reason for that is that soils are generally warmer when soybeans are planted than when corn is planted. The typical response in early growth observed in corn is usually not observed in soybeans.


However, yield response to direct soybean fertilization with phosphorus and other nutrients if needed in low-testing soils can be expected.

K-State guidelines for soybeans include taking a soil test for phosphorus (P), potassium (K), sulfur (S), zinc (Zn), and boron (B). If fertilizer is recommended by soil test results, then fertilizer should either be applied directly to the soybeans or indirectly by increasing fertilizer rates to another crop in the rotation by the amount needed for the soybeans.

The most consistent response to starter fertilizer with soybeans would be on soils very deficient in one of the nutrients listed above, or in very high-yield-potential situations where soils have low or medium fertility levels. Furthermore, starter fertilizer in soybeans can be a good way to complement nutrients that may have been removed by high-yielding crops in the rotation, such as corn and help maintain optimum soil test levels.

Banding fertilizer to the side and below the seed at planting is an efficient application method for soybeans. This method is especially useful in reduced-till or no-till soybeans because P and K have only limited mobility into the soil from surface broadcast applications.

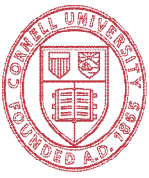
However, with narrow row soybeans, it may not be possible to install fertilizer units for deep banding. In that situation, producers can surface-apply the fertilizer. Fertilizer should not be placed in-furrow in direct seed contact with soybeans because the seed is very sensitive to salt injury.

Soybean seldom responds to nitrogen (N) in the starter fertilizer. However, some research under irrigated, high-yield environments suggests a potential benefit of small amounts of N in starter fertilizer. 



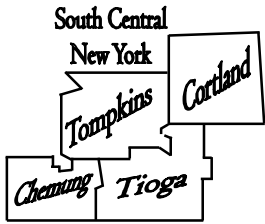
**Figure 1. Visual differences with starter P fertilizer on low testing soils.**

**Picture by Nathan Mueller, K-State Agronomy graduate student.**



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

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 13045  
 Permit No. 1



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 Cortland, NY 13045  
 Phone: (607) 753-5077  
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Area Dairy & Field Crops Team

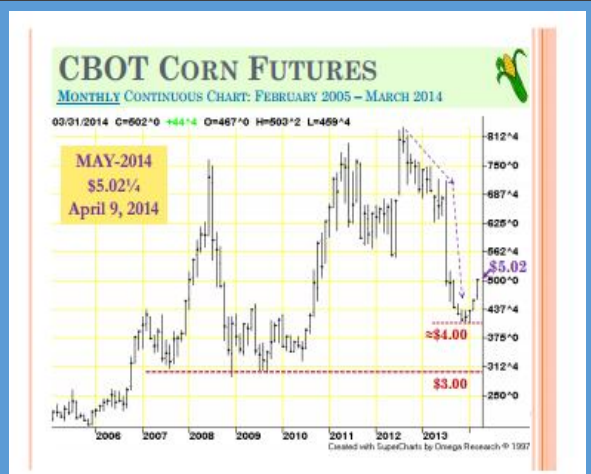
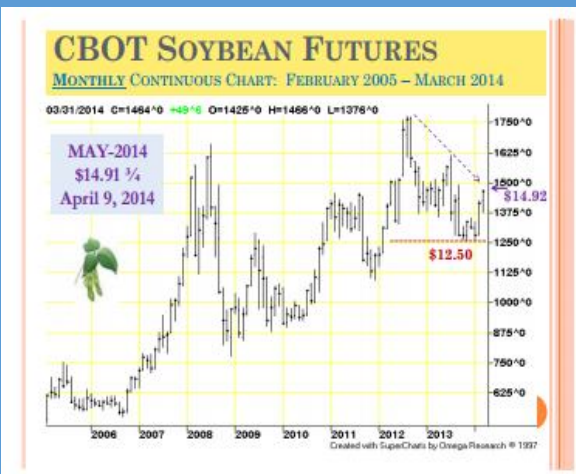
**Building Strong and Vibrant New York Communities**

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.

**CALENDAR OF EVENTS**

- JUNE 5** **SMALL GRAINS MANAGEMENT FIELD DAY: Musgrave Research Farm, 1256 Poplar Ridge Road, Aurora NY. 10 AM – NOON. Topics:** 2014 Crop development overview, Straw – the hidden money maker, Small grain varieties and availability of seed, Disease management update, including fungicides, variety selection, integrated management of Fusarium head blight and mycotoxins, Wheat management practice updates from around the state, and Malting barley: what do buyers want and how can farmers deliver? DEC/CCA credits.
- JUNE 24** **SEED GROWERS FIELD DAY: NYSIP Foundation Seed Barn, Ithaca, Rte 366. CCA credits**
- JULY 16** **NY WEED SCIENCE FIELD DAY: H. C. Thompson Research Farm, Freeville NY – 8:30am to 11:30am. Musgrave Research Farm, 1256 Poplar Ridge Road, Aurora NY - 2pm to 5pm. DEC/CCA credits.**
- JULY 17** **AURORA FARM FIELD DAY: Musgrave Research Farm, Aurora NY. DEC/CCA credits.**
- JULY 17-19** **GRASSTRAVAGANZA: Pasture Soil Health Creates Wealth – Morrisville State College. See page 7 for more information. To register go to: [http://scnydfc.cce.cornell.edu/index\\_real.php](http://scnydfc.cce.cornell.edu/index_real.php).**

(Continued from page 5) – Grain Marketing



Source: Daniel O'Brien, Extension Ag Economist, Kansas State. Grain Marketing Outlook and Strategies 2014. [http://www.agmanager.info/marketing/outlook/crop\\_outlook/OBrien\\_AgExpo\\_GreatBend\\_04-10-14.pdf](http://www.agmanager.info/marketing/outlook/crop_outlook/OBrien_AgExpo_GreatBend_04-10-14.pdf)

***“Patience is a virtue, and if you still have grain in storage, you are a patient marketer. Stubbornness is not a virtue – take a good hard look at the opportunity to get grain sold during the current price rally.”***  
***Ed Usset, Grain Marketing Specialist, University of Minnesota.***