Cornell University
Cooperative Extension
NWNY Dairy, Livestock & Field Crops Team

NORTHWEST NEW YORK DAIRY, LIVESTOCK & FIELD CROPS TEAM

Ag Focus

How Will the Cold Temperatures Affect Field Crop Insect Pests?

By: Mike Stanyard

The most popular question that I have been asked this winter is, "Are we going to have fewer insects this spring with all this extremely cold weather?" The answer usually depends on which insect they are inquiring about and how much snow cover we have during the really cold spells. Most insects that overwinter in extreme environments have developed incredibly ingenious strategies for survival.

This question is only relevant for those insects that actually spend the winter in NY. Some of our worst pests are not year-round residents. These "snowbirds" overwinter in the southern Gulf States and wait out the cold temperatures. Some of these pests include common armyworm, black cutworm and potato leafhopper. Each season a new population migrates up to New York and we have no clue if they will be a problem until they get here. We can only hope that the below freezing temperatures that are reaching all the way into Florida can reduce the populations flying north in the spring.

Many of our field crop pests do tough it out through the New York winter. All of them have different survival strategies and overwinter as eggs, larvae, and adults. Let's break them down to what life stage they overwinter as and discuss the adaptations that make it successful.

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The NWNY Dairy, Livestock & Field Crops team will provide lifelong education to the people of the agricultural community to assist them in achieving their goals. Through education programs & opportunities, the NWNY Team seeks to build producers' capacities to:

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- Provide safe, healthful agricultural products
- Provide leadership for enhancing relationships between agricultural sector, neighbors & the general public.

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Overwinter in the Egg Stage

The egg is usually the most resilient stage of an insect's life. This fact is even more pronounced if the insect overwinters in the egg stage. The egg contains the chemical glycerol which acts like antifreeze and prevents the egg from freezing. The egg can freeze but not until it hits what's called the super cooling point which is usually much lower than 0˚F.

Female soybean aphids (SBA) lay their overwintering eggs on buckthorn bushes in the fall. These eggs are unprotected and exposed to the absolute lowest temperatures. Entomologists in Minnesota have determined that the super cooling point at which SBA eggs could no longer survive to be a frosty -34˚F. That's much colder than we usually get here in NWNY so aphid populations are probably not going to be affected. Corn rootworm eggs rely on a similar strategy but overwinter more protected in the top four inches of soil in last year's corn fields.

Overwinter as Larvae

European corn borers overwinter as full grown larvae in the lower stalks of corn plants. They are freeze tolerant, and can survive for months at -4°F, even with ice crystals in their tissue. White grubs and wireworms overwinter down in the soil below the frost line. Western bean cutworm overwinters as a pre-pupa in an earthen cell up to 19" deep in the soil. All of these insects that overwinter underground depend on good snow cover that acts as an insulating blanket.

Overwinter as Adults

To avoid exposure to severe cold and fluctuating temperatures, many adult insects overwinter under plant debris in woodlots and in thick fencerows. The amount of snowfall is also a huge factor in their overwintering success. Most insects in this category are beetles, and include alfalfa weevil, cereal leaf beetle and corn flea beetle. Beetles in general are a hardy beast but low winter temperatures and minimal snow cover can reduce their overall survival. For example, a temperature model for overwintering corn flea beetle (CFB) survival is used to determine if the bacteria, Stewart's Wilt, will be a problem in corn.

CFB is a carrier of Stewart's Wilt. If the average temperature for December, January, and February is below 27˚F, the probability of the disease will be very low. If the average is greater than 33˚F, the risk is very high.

So, even though we have had a bitter cold January and February, there has been lots of snow to keep overwintering insects buffered. Bottom line, I think the bugs will come through this winter just fine and we should be prepared to diligently scout our crops this spring.

On a Farm *Not* So Near You...

Tillamook, Oregon

By: Libby Eiholzer

During the last week in January my husband and I took a trip to Oregon. As we both work in the dairy industry, it was only fitting that we included a farm tour. We visited Victor Dairy, LLC, a 400-cow grazing dairy near the coast which is a member the Tillamook County Creamery Association, a well-known local cooperative. We made the connection with farm owner Chad Allen through a friend of mine who works for the Oregon State Extension Service.

When we left the farm, my husband, Garrett, commented that dairy farming in Oregon seems to be almost a completely different business than dairy farming in New York. The first thing that jumped out at us was the weather. Allen said that in the Tillamook Valley, temperatures stay between 30 and 70 degrees year round. While they do get a few snowstorms and freezes in the winter, the mostly-open barns show that winter weather isn't a constant problem for them. As for summer, cows don't suffer terribly from heat stress, as witnessed by the relatively low number of fans in the barns.

While the cool summers are great for the cows, and the abundant rainfall creates excellent conditions for grazing, these factors make prospects for corn silage pretty dismal. The TMR at Victor Dairy includes flaked corn and barley, cottonseed, wheat distillers, brewer's malt, alfalfa hay, a protein/vitamin/mineral mix and hay silage in the form of baleage; no bunker silo to be found! Allen shared with us that they used to purchase corn silage by the truckload from the valley on the other side of the mountains, but that the cows never did very well on it, and that the quality deteriorated rapidly within 2-3 days. Now they rely on baleage as the main forage in their TMR. That's quite hard to imagine coming from a state where growing corn is an integral part of dairy farming. In the summer the primarily Holstein herd spends most of its time grazing, and receives grain in the parlor and TMR in the barns.

http://www.lib.utexas.edu/maps/us_2001/oregon_ref_2001.jpg

Farm owner Chad Allen leads us under an old railroad trestle to see the dry cow facilities. Note the green January grass!

Another interesting and radically different aspect of the operation is manure management. All of the farm's liquid manure is delivered to a digester owned by the Port of Tillamook Bay, and the effluent is trucked back to the farm. The tax credits and federal carbon credits are signed over to the port, and a broker sells those to offset the cost of hauling. Part of the contract also stipulates that no more N and P can be returned to the farm in effluent than were taken away in raw manure. Allen says he has been happy with the program overall, and highlights this benefit: 7-8% of the nitrogen returned to the farm in effluent is in a more readily available form to the plants upon spreading than undigested manure.

I'll have to admit that the green grass and light rain felt pretty good for a January day, but the mildness of the Oregon winter doesn't mean that dairy farmers there don't have any challenges, they're just different than ours here in New York.

March Is Frost Seeding Time!

By: Nancy Glazier

With 2 feet or so of snow on the ground (2/9), it's hard to imagine that frost seeding time is right around the corner. March is usually a great time to add some legumes into your pastures or hayfields. It is a way to improve pastures without losing a production year. Added legumes will boost production and fill in thin patches or bare spots; they will provide needed nitrogen to the grasses already growing, and provide protein for the livestock. Little or no tillage is involved which reduces the potential for soil erosion. Hopefully, you did your homework last fall by checking the forage quantity, types and groundcover. If not, take a walk after the snow melts!

Frost seeding clover with handheld broadcast seeder. Photo credit: Jon Zirkle, Michigan State University Extension

Frost seeding is the same as any other type of seeding or planting; seed-to-soil contact is critical. What works with this technique is the freeze-thaw process in late winter/early spring. As the days get above freezing and nights are below freezing, this action works the seeds down into the soil in preparation for germination. Spreading seed on frozen ground reduces the potential to rut up the pasture. This can be done early morning or late in the day.

Legumes work best for frost seeding due to the shape of their seeds. Success will vary farm to farm, but clovers will establish better, specifically red clovers. They are shorter-lived in a pasture; a way to offset that would be to frost seed red clover with slower-establishing birdsfoot trefoil. By the time the clover dies out, the trefoil will be growing well. Another way would be to routinely frost seed half of your pastures every year. It can be an inexpensive improvement. Alfalfa can be frost seeded, but don't try to seed into a field with alfalfa (even a thin stand) growing. The existing plants have an allelopathic (toxic effect) on alfalfa seedlings; they won't let them grow and become established. Suggested rates are below. The price of seed is relatively low, so don't skimp.

Lbs / Ac
Red Clover - 6 to 10
Ladino Clover - 2 to 4
Birdsfoot Trefoil - 5 to 8
Alfalfa - 6 to 10

Frost seeding grasses may have limited results, but is more successful with bunch type grasses like orchardgrass. Try seeding some on a small scale. If the pasture is tall or matted, your success with grasses or legumes may be limited. An option to try is to broadcast the seed and let livestock in – carefully – for a flash or quick grazing. Between their minor munching and hoof action, the seed will have a better chance of reaching the soil. Also, a light disking or harrowing could scratch the ground enough to let the seed get down the soil to grow. You may need to frost seed grasses and legumes separately due to the seeds different shapes.

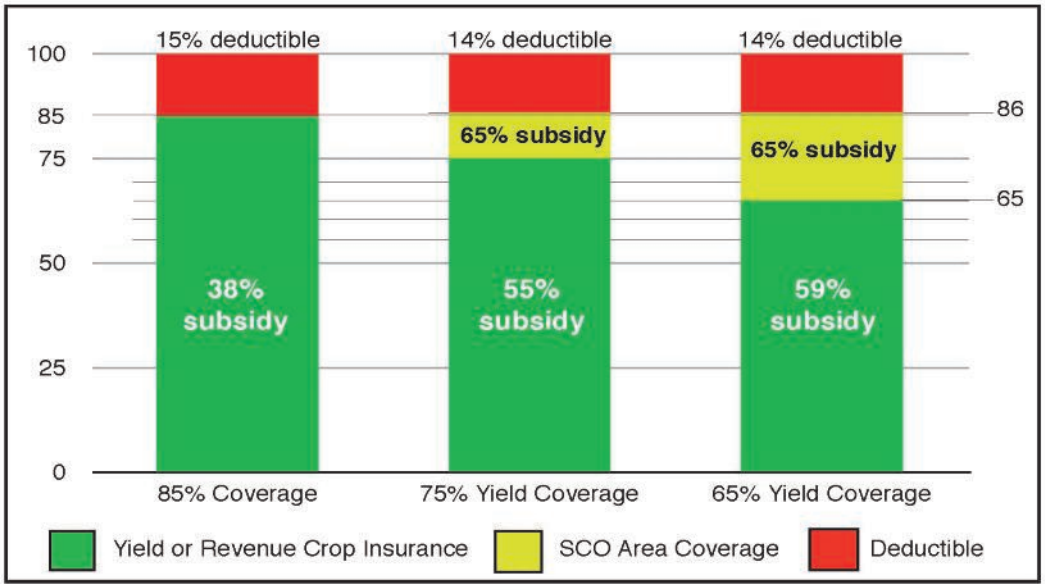
Equipment for frost seeding can be as little or as big as needed. The size of the pasture or field will dictate what's needed, unless you have time to walk a large field with a small cyclone spreader. A broadcaster can be mounted on the back of an ATV or small tractor.

Fertilization will help seedlings get established as well as existing grasses. Wait until late summer if a soil test shows phosphorous or potassium is needed.

Sometimes overgrazing or continuously grazing will leave bare or thin spots, or kill the existing legumes. Frost seedings can be done to improve the stand, but this will only be a short term fix. Rotational grazing is the best way to improve a stand for the long term. Frost seeding will return legumes to the pastures; dividing the pasture into at least four paddocks will provide forages time to rest and regrow through the growing season. Grazing needs to be carefully managed early season to prevent damage to the tender seedlings, yet allow light to reach them.

Who can predict what this spring will be like? Dry spring conditions will discourage seed germination. Unfortunately, there is no way to control this. With the seed in place, there is a chance that it will germinate and grow when sufficient moisture is there.

Insuring Your Corn or Corn Silage?



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Compare your county's expected average yield (computed by USDA RMA) to previous individual annual yields reported by NASS and your farm's yield history to assess the value of area versus individual coverage. Visit www.rma.usda.gov to use the Crop Insurance Decision Tool (CIDT) to estimate premiums.

Producers who choose to enroll in the USDA Farm Service Agency(FSA) ARC program cannot enroll these acres in SCO.

You must enroll in corn, corn silage crop insurance- with or without SCO- by the sales closing date of March 15 for the 2015 growing season. **Contact a crop insurance agent today.**

To find an agent, ask a neighbor for a recommendation, ask your FSA office or visit the RMA website at www.rma.usda.gov/tools/agent.html. For more information, visit www.agriculture.ny.gov/AP/CropInsurance.html

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Strategic Planning 101 – Part 2

By: Timothy X. Terry

Dairy Strategic Planning Specialist, Harvest NY

Last time we talked about what a strategic plan is or is not. This time we'll look at why it's important.

Justification

The greatest benefit of having a strategic plan is to be able to "zig and zag," "bob and weave," or make other timely adjustments in the business without losing ground or sight of the big picture. The formal term for this is Transient Advantage. It allows you to take advantage of opportunities as they arise (piece of equipment comes up for auction) and say no to projects that may be unprofitable or otherwise send you down a rabbit trail (50 acres for rent 10 miles away). For example, in the road trip analogy let's say we're driving east on I-90 and we notice traffic beginning to slow down and back-up – presumably an accident. At the same time we notice we're less than a mile to the next exit. So our transient advantage here would be to get off at that next exit, take Rts.5&20 east and get back on I-90 at the first interchange beyond the accident. While you're on 5&20 the strategic plan of heading east to Albany, then, keeps you from detouring south along the various wine trails. (While this "rabbit trail" may be very enjoyable it will certainly impede your eastward progress.)

Another important point illustrated here is the ability for an organization to use the strategic plan to make decisions in a timely manner. An agile company or enterprise understands when "roughly right" is more appropriate than "accurate and slow." When farm managers cannot make this distinction the business will suffer from "paralysis by analysis," and frequently a decision may never be made. Back on I-90 the driver had less than a mile (less than 60 seconds at 65 mph) to decide to get off. If he couldn't make the decision he was paralyzed in traffic. Yes, progress would still have been forward, but it would have been intensely slow.

Zig or Zag? Bob or Weave?

Unfortunately, most decisions are not always that obvious or easy. The trick is to find the balance between making the change and staying the course. In her book, *Challenge the Ordinary*, Linda Henman offers seven secrets to achieving that balance.

1. **Stay close to the customer.** This is not necessarily all your customers, but the best ones. I would argue vendors/suppliers, too, because they can alert you to new products, better services, or troubleshoot problems. Try to anticipate their needs, and solicit feedback, if possible. Joel Salatin, owner/operator of Polyface Farms in the Shenandoah Valley of Virginia, frequently offers a short questionnaire to his "salad bar beef" customers as a way of collecting feedback and finding out what other products they might like to see come to market.

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2. **Develop EOC orientation – Eye of the Customer.** Be proactive – try to see the world through the customer's eyes. For example, Minoxidil was originally developed as a treatment for hypertension (high blood pressure), but it was noticed that it also reduced hair loss and, in some cases, promoted hair growth. The product was reformulated and Rogaine® was born. A dairy farm in Wyoming County has taken separated manure solids (a waste product) and with a little on-farm processing, and good marketing, has established a bagged garden compost market.

3. **Reward entrepreneurial behavior at all levels.** Psychologists agree that positive reinforcement goes farther than negative correction. If someone has an idea that generates income and/or reduces expenses reward them! Maybe it is a cut of the take, but it should certainly be recognized in front of their peers – especially if you want the practice to go viral.

4. **Have an exit strategy.** Don't be afraid to abandon projects or protocols that are no longer necessary, unprofitable, or are otherwise a drain on the system. If it is a mistake on your part suck it up and correct it. Remember, "The only man who makes no mistakes is the man who never does anything. Do not be afraid to make mistakes providing you do not make the same one twice." *Theodore Roosevelt*

   Moreover, "It's only a mistake if you refuse to correct it." – *JFK*. Enough said.

5. **Institute budget checkpoints.** Budgets are usually created on an annual basis, but you will want to find out if this is going according to plan long before then. Set some benchmarks at 3, 6, and 9 months. Be sure to assign someone specifically to monitor the progress. This should also be someone who does not have an interest in the business so they maintain their objectivity – i.e. accountant. Reward those who can tweak the system and achieve greater results or reduce the costs (see #3).

6. **Put smartest people in charge of risky decisions.** Smartest, not hardest working, because you are frequently dealing with innovation and risk, and it may require tweaking along the way. These should also be the ones who have "bought into" the project. The last thing you want is a malcontent, a nay-sayer, or an idiot-with-initiative making major decisions for the enterprise. Remember to balance experimentation, which takes time, with analysis, which can happen quickly. Remember, a cow's rumen takes 7 days to turn over so don't evaluate a new diet by the bulk tank weights in the first week. Lastly, match the level of authority with the level of responsibility. Speaking from experience there is nothing so frustrating as having a job to do but not the accompanying authority to get it done.

7. **Make feedback seamless and fast.** Remove roadblocks up the chain of command. If it's a decision that can only be made by the farm manager don't make it so the calf feeder has to go to the calf manager who has to go to the herdsman who has to go to the herd manager who then reports to the farm manager. Yes, keep all these people "in the loop," but the farm manager, or any decision maker, still needs to be accessible even if it is just simply putting their cell phone number up on the wall of the office or milkhouse.

Next: Strategy vs. Decision Making

Upcoming Webinars:

Help Your Dry Cows Avoid Heat Stress

March 9, 1:00 - 2:00 p.m.
Presented by: Greg Dahl, University of Florida
Hoards Dairyman
http://www.hoards.com/webinars

Technology Tuesday Webinar Series:
Calf & Heifer System Planning & Design

March 10, 8:30 - 10:30 a.m.
Presented by: Dan McFarland & John Tyson, Penn State Extension Dairy Team
http://extension.psu.edu/animals/dairy/courses/technology-tuesday-series

Technology Tuesday Webinar Series:
Best Milking Practices: Evaluating Your Routine

March 17, 8:30 - 10:30 a.m.
Presented by: Amber Yutzy, Penn State Extension Dairy Team
http://extension.psu.edu/animals/dairy/courses/technology-tuesday-series

Proper Dry-Off Procedures to Prevent New Infections & Cure Existing Cases of Mastitis

March 24, 1:00 p.m.
Presented by: Dr. Stephen Nickerson, University of Georgia
http://extension.psu.edu/animals/dairy/courses/technology-tuesday-series

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Bovine Leukemia Virus – Ignored for Way Too Long?

By: Jerry Bertoldo, DVM

Unless you have been in the cattle export business, the high genetics domestic market or have experienced unusually high levels of lymphosarcoma or "cancer" in your herd, you probably have not been overly concerned about Bovine Leukosis Virus (BLV) as an economic issue.

BLV is a contagious disease of cattle. About 5% of infected cattle will eventually develop malignant lymphoma and/or lymphosarcoma, which has now become the most common neoplastic disease of cattle identified at slaughter in the United States. Not all herds see the same correlation between the number of animals being virus positive and the rate of clinical disease. There are no vaccines to prevent it or treatments to stop it. Signs of these growths in a slaughtered animal are cause for carcass condemnation. To date no association with any malignant or cancerous conditions in humans has been established although HIV/AIDS in humans and BLV in cattle are caused by related retroviruses. No other species is known to harbor or spread the virus.

BLV-infected dairy cattle have an impaired immune response following vaccination, one of several possible reasons for the apparent failure of an immunization to prevent disease. It is presumed that the immune response to other disease pathogens is also impaired in infected cattle. Observations that BLV-infected cattle are more quickly culled and make less milk than their uninfected herdmates has been documented in research studies in recent years particularly at Michigan State University (*Erskine et al. 2014; Erskine et al. 2012a; Erskine et al. 2012b; Bartlett et al. 2013*).

In the 1960s and 1970s, the prevalence of BLV in US and Canadian cattle was approximately 10%. At the time, BLV-induced lymphoma/lymphosarcoma was the only consequence of the infection that was recognized. The cattle industries of both the US and Canada decided that BLV was not sufficiently costly to warrant control. At about the same time however, many other countries decided to control BLV. Today

The typical appearance of a cow with lymphosarcoma involving the heart resulting in poor circulation and backup of blood returning from the head and neck. Fluid accumulation (edema) in the jaw, brisket and belly is a common sign in these cases. Multiple organ systems may be involved without external signs to help with the diagnosis.

21 countries and Western Australia have successfully eradicated BLV from their cattle herds. Meanwhile the prevalence of BLV in the US has crept up to about 40% of dairy cattle. According to USDA surveys, 83% of US dairy herds have at least one infected animal (*USDA 2013*). The within-herd BLV prevalence ranges from 23% to 46% in affected dairy herds. An estimated 39% of beef cow calf herds have at least one BLV-infected animal.

Economic loss due to BLV comes from reduced milk production, cow longevity, international trade and sale price when cattle with lymphoma are condemned at slaughter. Annual economic losses to the US dairy industry are estimated to be $285 million. The 1996 USDA National Animal Health Monitoring System dairy study determined that 210 lbs. of milk/cow/year was lost for each 10% increase in the within-herd BLV prevalence.

The clinical disease of lymphosarcoma associated with BLV infection has been simply referred to as "cancer" by producers for many years.

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There are several presentations of the disease. The most notable is the swelling of lymph nodes in the flank, in front of the shoulders and behind the jaw. The heart, uterus, abomasum, spinal column and behind the eye are other locations that often develop tumorous growths. Clinical signs can vary: edema of the brisket and between the lower jaw, infertility, digestive problems, black tarry manure associated with stomach ulcers, paralysis of the hind limbs and bulging eyes.

Transmission is via infected blood or bodily fluids. Common needle use, multi-use of rectal sleeves, biting insects, gouge-type dehorning, tattoo pliers and even milking equipment are all possible means of spreading the virus. Colostrum from infected cows presents the most significant risk. Fortunately, freezing and pasteurization of colostrum will destroy both the white blood cells and the leucosis virus they harbor.

In New York, we are fortunate to have the NYSCHAP program and a top notch Animal Health Diagnostic Lab. Bovine Leukosis is indeed one of the modules that producers can enroll in through NYSCHAP. https://ahdc.vet.cornell.edu/Sects/NYSCHAP/modules/bovineleukosis/index.cfm

The big question is how long will we wait as a nation before we take the action that other countries did decades ago to protect their cattle industries? The dreaded 19th century plagues of foot and mouth disease and contagious pleuropneumonia were eradicated in an era before antibiotics, vaccines, interstate highways and even telephones. In this day and age of technological advances we need to think intelligently about the short term inconvenience of control and eradication versus the long term competitiveness and viability of the industry in the world market.

For further details about BLV, its transmission, associated pathology and control go to: http://cvm.msu.edu/alumni-friends/continuing-education/blv-in-the-usa/usablv

Economics of Intensive Wheat Management Practices – Analysis for 2014

By: John J. Hanchar and Donn E. Branton

Summary of Results

- Intensive wheat management has the potential to increase value of production, income, but additional costs to realize that potential can be relatively large.
- For 2014, analysis suggests that an intensive wheat management system outperformed a standard system based upon the estimated change in profit attributed to intensive management. Analyses for 2010 and 2011 yielded similar conclusions.
- Expected changes in profit are sensitive to a number of factors -- wheat price and input prices; increase in wheat yield; input use decisions given growing conditions and resulting changes in input costs, and others.

Intensive Wheat Management

The intensive wheat management system can be described as an information intensive system utilizing tissue sampling, additional soil testing, scouting and crop consulting services to make decisions regarding nutrients, pesticides, and other inputs in a controlled traffic (tramline) system. Rates, timing, location, and application method as they relate to input use receive emphasis. Since measurements are emphasized, the phrase, "If you can't, or don't measure it, then you can't manage it" comes to mind.

Estimating the Expected Change in Profit Using a Partial Budget

One factor that producers use to evaluate possible changes in practices is the expected change in profit. Profit equals total value of production, income minus the costs of resources, inputs used in production. Expected change in profit equals the expected change in total value of production minus the expected change in costs. Analysts construct a partial budget to estimate the expected change in profit associated with a proposed change in the farm business, for example, adoption of intensive wheat management practices compared to a standard or base system.

We describe here the analyses developed based upon Donn Branton's experiences and results for the 2014 wheat crop, and report expected changes in profit associated with the intensive wheat management system practiced by Donn versus a program of standard practices.

Results

The intensive wheat management system outperformed the standard system in 2014 based upon the estimated change in profit of about $52 per acre attributed to the intensive management system (Table 1). Expected change in profit by expected yield increase by expected wheat price ranged from negative $55 per acre to positive $129 per acre assuming straw yield and quality are the same for the intensive and standard systems (Table 2).

The intensive system outperformed the standard system in 2010 and 2011, as well. However, the expected changes in profit were $126 and $49 and per acre for 2010 and 2011, respectively.

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Partial Budget for Profit*

Table 1. Partial Budget for Profit

Proposed: Intensive Wheat Management Program, 2014 vs. Current: Standard Wheat Program, 2014

Assumptions			
Expected wheat price net trucking ($/bu.):	5.74	Expected value of straw sold in field_program ($/ac.)	23.75
Expected wheat yield_program (bu./ac.):	93.2	Expected value of straw sold in field_standard ($/ac.)	23.75
Expected wheat yield_standard (bu./ac.):	65	Value of standing clover sales in field, program only ($/ac.):	59.53
Expected change in wheat yield (bu./ac.):	28.2	Expected change in value of straw sold in field, program (%)	0
Straw quantity unchanged		Clover seeding and harvest for program only	
Average future year, before tax, marginal analysis			
Analysis is per acre based on 160 acres harvested			
Items that Increase Profit		**Items that Decrease Profit**	
Increased Total Value of Production	---$/ac.---	**Decreased Total Value of Production**	---$/ac.---
Crops sold_increased wheat yield	161.87		
Crops sold_additional value of straw sold in field	0.00		
Crops sold_cutting of clover taken by buyer	59.53		
Subtotal	221.40	**Subtotal**	0.00
Reduced Costs		**Increased Costs**	
		Fertilizers_additional nitrogen	50.18
		Other crop expense_addt'l fungicides, ...**	69.59
		Other crop expense_2 addt'l applications	10.00
Subtotal	0.00	Spray, other crop expense_crop consulting	1.00
Total of Items that Increase Profit (A)	221.40	Spray, other crop expense_tissue samples	1.89
		Spray, other crop expense_soil samples	1.00
		Seeds and plants_clover seed	18.00
		Harvest costs_combining	3.01
		Harvest costs_hauling	3.67
		Drying costs	4.79
		Depreciation_addt'l nozzles	1.39
		Depreciation_tram line controller	3.06
		Interest_addt'l nozzles	0.35
		Interest_tram line controller	0.54
		Value of operator management	1.31
		Subtotal	169.78
		Total of Items that Decrease Profit (B)	169.78
		Expected Change in Profit (A) minus (B)	51.62

*Profit equals the total value of production minus the costs of resources used in production.
**Additional fungicides, insecticides, micro nutrients and others.

Wheat prices were $8.00 and $7.65 per bushel for 2010 and 2011, respectively, compared to $5.74 for 2014, while the expected additional yield was 30 bushels per acre for all three years. In 2011 and 2014 the total additional cost to realize additional income was considerably higher compared to 2010. Higher prices for some inputs, for example nitrogen, and greater input usage, for example, an additional fungicide application in 2011 compared to 2010, underlie the differences in expected change in profit.

Based upon the 2014 analysis, break even wheat yield increases were approximately 21, 18, 15, and 13 additional bushels per acre for expected wheat prices of 5, 6, 7, & 8 dollars per bushel, respectively.

	Expected Wheat Yield Increase (additional bushels per acre)		
Expected Wheat Price ($ per bushel)	10	20	30
		$ per acre per year	
5.00	-55	-8	39
6.00	-45	12	69
7.00	-35	32	99
8.00	-25	52	129

Table 2. Expected Change in Annual Profit by Expected Wheat Yield Increase by Expected Wheat Price, 2014.

Winter Dairy Management - 2015

"Increase Milk Components Profitably"

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March 9, CCE-Genesee County, 420 E. Main St., Batavia
10:00 a.m. - 2:30 p.m., Hot lunch & proceedings included

Impact of Milk Components on the Milk Check
Jason Karszes (Canandaigua), Kathy Barrett (Batavia), Cornell PRO - DAIRY Program

Understanding Income over Feed costs and its Impact on Profitability
Betsey Howland, Cornell PRO - DAIRY Program

Nutrition's Impact on Milk Components
Dave Balbian (Canandaigua), Regional Dairy Specialist Cornell Cooperative Extension,
Tom Overton (Batavia), Cornell University

Case Farm Example - Local producer story of increased profitability through improved milk components

Reservations contact: Cathy Wallace: 585-343-3040 x138 or cfw6@cornell.edu

$40.00 not enrolled in NWNY Team
$35.00 enrolled in NWNY Team & $30.00 for each additional person from same farm/business

Tips for Transitioning Fields to Organic Production

By: Bill Verbeten

With lower corn, soybean, and wheat prices many conventional grain farmers are considering transitioning a small part of their farm to organic to take advantage of the strong demand and higher prices for organic grains, *Table 1*. This article passes along the advice of some successful organic grain farmers in western NY as well as some research based-practices to increase the odds of successfully growing organic grains.

Organic Crop	Price
Corn	$11.50/bu
Soybeans	$28/bu
Transitional Black & Pinto Beans	$0.55/lb
Black & Pinto Beans	$0.90-93/lb
Light Red, White, & Dark Red Kidney Beans	$1.20-1.34/lb

Table 1: Organic Grain Prices
Source: Personal Communication with Everbest Organics

Certification & Transition Crops

To receive organic certification a field needs to be free of prohibited inputs for 36 months. Additionally farms need to work closely with a certifier, such as NOFA-NY (http://www.nofany.org/organic-certification/contact-certification), to make sure the appropriate documentation is in place.

But what are some ways to deal with three years of farming a field organically without getting the organic premiums? One option is to grow hay or haylage and not apply insecticides or prohibited fertilizers. For split operations (conventional and organic on the same farm) with cattle or a forage market this is a common practice. Another strategy is to grow crops that have a premium for transition. Dry beans are in demand and frequently have to be imported into NY so farmers have an opportunity for a premium price for this crop. Contact Everbest Organics (http://www.everbestorganics.com/) for more information. With the growth of the distilling market, some distillers are willing and able to pay a little more for non-GMO corn for their whiskey. Contact information for NY distillers is available on my Google Map (http://www.nwnyteam.org/submission.php?id=320&crumb=grains|3). Non-traditional crops like buckwheat may have a place during these transitional years. Contact Birkett Mills for more information (http://www.thebirkettmills.com/company-infoforgrowers.asp). There is high demand for organic feed for organic livestock, but this market is not an option for transitional grain. Farmers seeking to enter organic markets should contact local organic farms and commercial outlets for their grain such as Lakeview Organics in Penn Yan, NY (http://www.lakevieworganicgrain.com/).

Best Management Practices

Choosing the right field goes a long way to making the transition to organic production easier. A number of split operation farmers recommend taking one of your best fields to start with organic. Fields with poor drainage, shallow soil, compaction, and other issues will be more problematic during the transition period.

Having a large supply of manure on hand is a must for organic farming. The USDA Guide for Organic Crop Producers (http://nwnyteam.cce.cornell.edu/submission.php?id=465&crumb=organic|6) states *"Manures from conventional systems are allowed in organic production, including manure from livestock grown in confinement and from those that have been fed genetically engineered feeds."* It also states that there are restrictions on when the manure can be applied, *"Application of manure to organic crops is*

restricted by what is known as the 90–120-day rule, as described in § 205.203(c)(1). You may not apply raw, uncomposted livestock manure to food crops unless it is: 1. Incorporated into the soil a minimum of 120 days prior to harvest when the edible portion of the crop has soil contact; OR 2. Incorporated into the soil a minimum of 90 days prior to harvest of all other food crops."

Corn is generally the easiest grain crop to begin with in an organic rotation. It's a tough crop and most farmers already grow it. However there will need to be some management changes. First early planting is not recommended because the soils are still cold (<50 °F). This increases the time it takes for corn to emerge, gives insects (especially wireworms, white grubs, & seed corn maggots) a chance to eat the seeds, and increases the odds of seedling diseases attacking the corn. Fall plowing a sod followed by secondary tillage in the spring can greatly reduce these insects. However be sure any fall plowed fields are not highly vulnerable to erosion. Planting corn varieties with disease resistance is critical in organic corn because late season fungicide applications to control Northern Corn Leaf Blight and Gray Leaf Spot are not in the toolbox for organic fields. Delaying planting for organic fields may also require a shorter relative maturity than typically grown on earlier planted conventional fields. Cultivation equipment is a must to reduce weed pressure. For weedy fields a secondary tillage pass a couple weeks prior to planting followed by shallow cultivation right before planting can help reduce the weed populations. In extreme cases weekly shallow tillage and field rolling operations can be used to germinate and kill weeds before planting. Right after planting and prior to emergence of the corn rotary hoes can work well to control weeds, but be careful not to use this tool too late and tear up the crop. Early season cultivation of weeds can be accomplished with a flex tine weeder, Figure 1, when the weeds are at the white tread stage. Later passes for weeds 1-4 inches tall will require low or high residue cultivators, Figure 2. Timing these cultivation passes is a bit of art and experience, but 2 to 3 passes are necessary for most organic farms. Increasing seeding rates slightly and narrowing row spacing can also reduce weed pressure in organic fields.

Figure 1: Flex Tine Weeder

Source: University of Maine (http://www.extension.org/pages/68312/video:-weed-control-in-organic-spring-cereals#.VNzkg_nF9Oj

Soybean and dry bean production will be similar to corn in organic fields, but the disease pressure will likely be higher. White mold devastated soybeans and dry beans, conventional and organic alike, across western NY in 2014 and has the potential to be a perennial problem in organic fields. However practicing good crop rotations, planting resistant varieties, and widening row spacing (30 inch instead of 7.5 inch) can help reduce disease pressure. Mike Stanyard evaluated the product Contans for three seasons in western NY and never could find a consistent response in soybeans. Additionally Gary Bergstrom has conducted many trials with similar products without much disease reduction so we don't recommend that farmers rely on these products to reduce soybean diseases in conventional or organic fields. Small grains (wheat, oats, barley, spelt, & rye) are almost always part of an organic rotation. Unlike high input conventional systems, small grains in organic rotations rely on manure, legume credits, and some Chilean nitrate for their nitrogen sources. While copper and sulfur products may slightly reduce some leaf diseases they haven't been shown to consistently reduce disease pressure. Gary Bergstrom at Cornell University is conducting additional research with these products on malting barley and will have some information under NY conditions later this year.

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Figure 2: Cultivator
Source: University of Wisconsin (http://corn.agronomy.wisc.edu/Management/L043.aspx)

With any of the organic grain crops there will be a need to invest in good seed cleaning equipment. Smaller, damaged, disease kernels can be separated by using fan mills, gravity tables, barrel cleaners, or even a well-placed screen in an auger. Be sure to thoroughly clean grain bins prior to storing organic grain and consider placing screening on the vents to keep insects out. *Diatomaceous* earth tears the soft bodies of insect larvae and can be added to organic grain. Managing the bin temperatures will go a long way to control insect growth in the bin as Ken Hellevang recently discussed at our Soybean/Small Grain Congresses. His website is here (http://www.ndsu.edu/aben/personnel/hellevang/) with more information on grain storage.

Figure 3: Grain Cleaner
Source: Farm King

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Proposed FAA Drone Rules Released

By: Bill Verbeten

The FAA released its proposed rules for small unmanned aerial systems (UAS), commonly called drones, on Sunday, February 15, 2015. This simply begins the public comment period, but does not lift the current restrictions on UAS for commercial purposes in agriculture and it does not change the rules for people operating as hobbyists.

Proposed Rules

An overview of the proposed rules can be found at http://www.faa.gov/regulations_policies/rulemaking/media/021515_sUAS_Summary.pdf. Some of the operational limits include:

- → Must be less than 55 lbs.
- → Must be in visual line of sight at all times w/o visual aids other than contacts/glasses.
- → May not fly over people other than operators of UAS.
- → Daytime flights only (official sunrise to official sunset local time).
- → Must always yield right of way to other aircraft.
- → No visual observer required.
- → First person view cameras are allowed, but they do not meet "see and avoid" parameters.
- → Can fly up to 100 mph and 500 feet above ground level.
- → Need 3 miles of visibility from control station.
- → Can operate in Class G airspace w/o notifying ATC, can operate in Class B, C, D, & E airspace only with ATC permission, cannot fly in Class A airspace, *Figure 1*.
- → Each person can only operate or observe 1 UAS at a time.

Operators of UAS will need to meet the following requirements:

- → Pass a knowledge test (likely the private pilot airplane or rotorcraft written exam). King Schools has good online courses to prepare for the test (http://www.kingschools.com/) and pass the knowledge test every two years.
- → Be vetted by the Transportation Security Administration.
- → Obtain a UAS operator certificate.
- → Be at least 17 years old.
- → Make UAS and documentation available to the FAA upon request for inspection.
- → Report accidents to the FAA within 10 days that result in injury or property damage.
- → Conduct preflight inspections of the UAS.

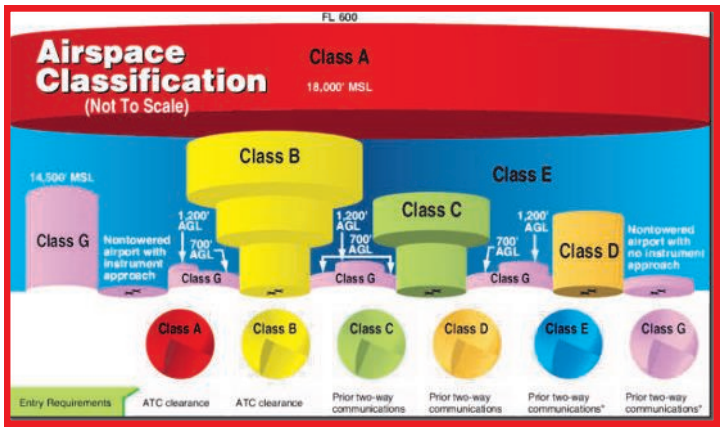

Figure 1: Classes of Airspace

Source: http://www.pilotworkshop.com/tips/atc_airspace_entry.htm

The aircraft (UAS) will need to:

- → Be registered with the FAA and renewed every three years. Cost of $5.
- → Aircraft markings, including the registration number are required.
- → Airworthiness certification is not required.

Public Comment Period

The public comment period on these rules will be open for 60 days. For more information check out this document, https://www.faa.gov/regulations_policies/rulemaking/recently_published/media/2120-AJ60_NPRM_2-15-2015_joint_signature.pdf. Many national farm organizations are likely to comment on these rules so work with your local representatives of these organizations if you would like to include your opinions.

Medications, Residues and You

By: Jerry Bertoldo, DVM

Supporting the use of antibiotics and other approved drugs in a judicious and legal fashion in our food producing animals is necessary to provide the food a growing world population requires. Ignoring some of the Wild West attitudes that still exists in some people's minds regarding treatment of their animals only gives the opponents of antibiotic use in particular more fuel for the fire.

Mike Apley, DVM, PhD is a professor of Production Medicine and Clinical Pharmacology at the Kansas State College of Veterinary Medicine. He is very involved with FDA regulations on antibiotic use and residues. Here are some notable one-liners that he has coined from his experiences in both the beef and dairy industries. Added comments have been paraphrased.

"I don't need no stinkin' records." The lack of record systems is the top problem FDA investigators find when tracking drug residues.

"I can remember her." Animals need to be identified, their treatment logged and required holdout determined before culling can be done.

"You have to combine the protocol with experience." Great chefs can improvise and change as they go, but producers need to follow the residue avoidance script animal to animal.

"I know what I'm doing." About 70% of cull dairy cow violative residues investigated by FDA are in facilities without a veterinary-client-patient relationship for the drug involved

"Just get it in the cow." Volume per injection site is an important determinant of how the drug is released into the system. Overdosing in one site, or changing sites, may dramatically increase withdrawal time.

"The best stuff isn't FDA approved." Some drugs or combinations thereof are just plain illegal to use even in an extra-label manner. Safety, efficacy and residue information may not be readily available for ones that are legal to use in that fashion.

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2	***Winter Dairy Management - 2015, "Increase Milk Components Profitably,"*** 10:00 a.m. - 2:30 p.m., CCE-Ontario County, 480 N. Main St., Canandaigua. For registration contact: Cathy Wallace: 585-343-3040 x138 or cfw6@cornell.edu. See page 17 for more details.
7	***Wyoming County Pride of Agriculture Dinner,*** 6:00 - 10:00 p.m., North Java Fire Hall, 4274 Route 98, N. Java. $25.00 per person, For registration or questions contact: Wyoming Co. Chamber of Commerce: 585-237-0230
9	***Winter Dairy Management - 2015, "Increase Milk Components Profitably,"*** 10:00 a.m. - 2:30 p.m., CCE-Genesee County, 420 East Main St., Batavia. For registration contact: Cathy Wallace: 585-343-3040 x138 or cfw6@cornell.edu. See page 17 for more details.
14	***Farmer to Neighbor Night 2015, Celebrating Agriculture in Orleans County,*** 6:00 p.m., White Birch Golf Course, 1515 N. Lyndonville Rd., Lyndonville, $25 per person. Reservations due by: March 6, For registration or questions contact: Kim Hazel: 585-798-4265 x26
17	***Ag Alternative Energy Workshop,*** 9:00 a.m. - 2:00 p.m., CCE - Erie County Auditorium, 21 South grove St., East Aurora. Registration or questions, contact: Megan Burley: 716-652-5400 x 138 or msb347@cornell.edu
17	***Herd Health & Nutrition Conference,*** Holiday Inn, Liverpool/Syracuse. Registration information contact: Heather Darrow: 607-255-4478 or hh96@cornell.edu
17 & 19	***Pesticide Training & Exam,*** 12:30 p.m. - 4:00 p.m., CCE-Wayne County, 1581 Route 88N, Newark. For additional information contact: 315-331-8415
18	***NYS Dry Bean Meeting,*** 9:00 a.m. - 3:00 p.m., LeRoy Country Club, 7759 E. Main Rd. (Route 5), LeRoy. DEC & CCA credits will be available. **RSVP by: March 10.** Register on-line at: cvp.cce.cornell.edu. Questions??? contact: Carol MacNeil: 585-394-3977 x406 or crm6@cornell.edu
24	***CORE Pesticide Applicator Training & Recertification Course,*** Core Training 8:15 a.m. - 12:15 p.m., DEC Examination: 1:00 p.m., CCE - Wyoming County, 401 N. Main St., Warsaw. **RSVP by: March 20**. For questions or registration contact: 585-786-2251.
27	***Livingston County Farmer - Neighbor Dinner,*** 5:00 p.m. Genesee River Restaurant & Reception Center, 134 N. Main St., Mount Morris