Cornell University Cooperative Extension SCNY DAIRY & FIELD CROPS TEAM

BROOME - CHEMUNG - CORTLAND - ONONDAGA - TIOGA - TOMPKINS

September 2018

Newsletter

Staging Corn Maturity for Harvest

Is your corn ready? Planting was staggered this year and maturities are following suit. **Sixty days**, that's the length of time, on average, that it takes for corn silage to mature from silking (pollination) to black layer (physiological maturity). We use ½ milkline as the indicator to start checking whole plant moisture. This year dry matter measurements are running dryer than milk line would typically indicate. At 1/4 milkline, DM measured 65% which we would normally expect at 1/2 milkline. Seventy percent moisture is the longterm accepted target for beginning harvest, but consideration needs to be given to your farm storage. Nutritionist are also encouraging



targeting higher dry matters to increase starch levels. It's a fine balance to strike the DM where you can pack well while preserving maximum nutrients. Bunk silos pack better at the top of the range, while uprights may have excessive seepage above 68% moisture (See Table 1). Whole plant dry matter samples will run 2-3 points above actual field conditions (aka field will be wetter). Knowing the maturity of your crop and how many days or weeks it takes to harvest allows you to

Table 1. Target Crop DM Levels for Vertical Silage Systems			
Oxygen limiting str	ucture		
Corn silage	40-65% DM [35-60% moisture]		
Conventional Conc	rete & Stave Structure		
Corn Silage :			
Under 60 feet	32-36% DM [64-68% moisture]		
Over 60 feet	Increase 2% DM per 10 ft vertical height		
Source: Mike Hutjens, U of Illinois, Urbana. http://qualitysilage.com/wp- content/themes/twentyten/PDF/TowerSiloManagement.pdf			

target the moisture for beginning harvest. (See Table 2) Moisture will decrease by .5-1 point/day depending on the weather conditions.

TABLE 2. Influence of Corn Maturity on Grain Yield, whole Plant						
Silage Yield and Moisture Content						
			% Max Yield		% Mo	oisture
Maturity	Avg cal	GDU to	Grain	Whole	Grain	Whole
Stage	Days To	Maturity		Plant		Plant
-	Maturity	-				
Silk	50-55	1100-	0	50-55		80-85
		1200				
Blister	40-45	875-975	0-10	55-60	85-95	80-85
Late Milk	30-35	650-750	30-50	65-75	60-80	75-80
Early Dent	20-25	425-525	60-75	75-85	50-55	70-75
Full Dent						
(1/2	10-15	200-300	90-95	100	35-40	65-70
Milkline)						
Blacklayer	0	0	100	95-100	25-35	55-65
Assumes 20	GDU/day to 1	maturity. Ad	dapted fro	m Carter, P	P.R. 1993.	Pioneer
Hi-Bred Inter	rnational, Inc					

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

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Cornell University Cooperative Extension

Cornell CALS PRO-DAIRY Calving and Neonatal Calf Care Training



Locations:

Day 1 - Oct 25 - East River Dairy, Shop, 4973 East River Crossing Rd, Cortland

Calving Program

- Calving assistance
- Assessment of calving situation
 - Delivery and immediate calf care

Day 2 - Nov 8 - Fouts Farm, 1400 NY- 222, Cortland

Neonatal Calf Care

- Initial calf care considerations
- Medication and supplementation
- Key points in sanitation
- Communication and employee training
- Physical examination of the calf

Each day runs from 9:30 AM to 3:00 PM.

Participants can sign up for both or just one day. Registration is \$75 for both days, or \$40 for one day.

To Register: scnydfc.cce.cornell.edu/event.php?id=735 or contact Betsy at (607) 391-2673 or bjh246@cornell.edu

This program is eligible for FSA Borrower Credits.

Program Details: prodairy.cals.cornell.edu/events

Program Details:

throughs and discussion.

The Calving and Neonatal Calf Care Training is a two-day

program held two weeks apart. It will be held on-farm with a combination of presentations, demonstrations, farm walk-

McMahon Family's Clear Vision Brings E-Z Acres Farm to Economic and Environmental Sustainability Lisa Fields, Staff Writier, Cornell Nutrient Management Spear Program

E-Z Acres Farm LLC, senior partners Mike and Pete McMahon are living proof that developing a clear vision leads to sustainable success. Mike and his wife Edie explained the farm's transformation. "We were in a tough situation in 1997 that only seemed to be getting worse. There were cow health problems and declining milk production along with high feed costs. Tom Tylutki [then CCE Area Dairy Specialist] asked us to be a case farm for Cornell's Agriculture and the Environment class, at that time taught by Professor Danny Fox and Stuart Klausner," Edie said. "It was a leap of faith for us, but we agreed, thinking there was nothing to lose."

The students gathered soil, crop and herd data to develop a nutrient management plan (NMP) for the farm. That in-depth look at the farm's data supported Tylutki's diagnosis of the root cause of the herd health issues. "We just weren't getting enough forage into the cows," Mike noted.

"We set a goal to increase the cows' forage intake from 42 to over 50%, working with the Cornell staff and students to figure out workable changes to crops and feeding to reach that goal. That year we converted 70 acres of heavier, upland soils from rotated corn and alfalfa to reed canarygrass, adding a lot of tonnage. We learned that we could make a whole lot more forage than we thought and by the next year we reached our goal with the cows' diets. Purchased feed costs dropped and milk production rose, so our financial picture began to brighten," Mike explained.

Intensively managed grass forage fit well into the NMP, providing a new option for manure applications. "We began to tailor manure and fertilizer inputs based on soil tests and best timing for crop intake and to avoid run-off. We also fit the crops to the soils where they could grow best," Mike said. "Our cropland sits over the shallow, solesource aquifer for 23,000 people in Homer and part of Cortland. The Factory Brook trout stream runs through much of our well-drained valley land where we grow corn and alfalfa, so the NMP is a critical management tool for us."

E-Z Acres conducted its first Whole Farm Nutrient Mass Balance (NMB) in 2003. In this annual assessment exports of N, P, and K are subtracted from imports, and the balance is expressed as nutrients per tillable acre (recycling opportunities) and per hundredweight of milk (production efficiency). When both indicators are in the "feasible" range, the farm is in the optimum operational zone, commonly referred to as the 'green box'.

"The NMB is the only whole farm assessment tool we have that's easily done at the farm level. Farmers can see if they operate in the 'green box' and compare with peers," explained Professor Quirine Ketterings who leads the Cornell Nutrient Management Spear Program (NMSP) and its NMB program.

Ketterings added, "Shortly after I started working at Cornell in 2001, Danny got me involved in his class and I met the McMahons. We used Stuart Klausner's early version of the NMB for E-Z Acres. Over time, we expanded the approach and developed a stand-alone software program that's free for anyone to use. The 'green box' was established with the help of over 100 New York dairy farms and many farm advisors. Participating farms who submit their input sheets to us get a report that shows their farm balances in the context of the 'green box' and compared to peers (anonymously). Annual participants can also see their graphed trends over time."



(Photo: from left to right: Edie, son Neil, Pete, Ethan Supa, and Mike McMahon of E-Z Acres Farm LLC. Photo taken by Tom Tylutki)

E-Z Acres was among the first farms

in the assessment program. In the first 4-5 years, NMBs for N, P, and K were above the 'green box' but the farm's P and K balance has been in the 'green box' ever since, and the N balance too, for all but a few years.

"It took a few years to see trends in the NMB numbers," Edie commented. "Then we began to delve into what's behind them. They reflect our progress with the goals we set for feed and crop management. The NMB is part of our annual planning, and we look forward to seeing how our NMB trends reflect the efficiency we aim to achieve. The nutrient cycle of our farm fits the concept of the slogan, "Reduce, Recycle, Re-use." She added, "The compromised herd became truly healthy and replacement numbers grew a few years after our major changes. With progress we gained some confidence, and could consider changes from a place of stability, including adding two junior partners to the business."

Mike said, "As our internal replacement numbers grew, our herd size went up to 800 cows currently, our land base expanded to 2300 acres, and we began incorporating manure to be as nutrient efficient as possible and protect water resources. In 2017 we added a satellite manure storage on the hill ground to make spreading on the grass acres more efficient. We've reduced tillage and we added cover crops to rotated ground. The improvements in soil health have led to better crop tolerance to weather extremes, and the yield increases have created available acres to grow our own grain corn."

E-Z Acres currently feeds a 67% forage diet to the milking herd, and uses multiple bunks to segregate forage by type and analysis. The rolling herd average is 29,600 pounds of milk per cow. Edie noted, "Our practices all integrate as Precision Feed Management, with high quality, high forage diets for our cows as the guiding principle. Thanks to Tom, now our nutritionist, our feeding is so precise, we can adjust for the market. That flexibility has a big impact on our financial picture."

Their dedication to water quality protection led the McMahons to monitor five wells in the watersheds of E-Z Acres' cropland for the past 21 years. Nitrate levels in those wells are all below concern, and four of the wells have showed marked improvement over time. They received the **Outstanding Dairy Farm Sustainability** award from the Innovation Center for US Dairy in 2018, and were featured speakers at SUNY Cobleskill's 2018 "Seventh Generation" annual meeting. The ethic of providing an environment where future generations can thrive is reflected in their 20 years as an environmental case study farm for Cornell students. The farm offers a wealth of history, with results of their changes clearly quantified, and the students offer a fresh outlook from an outside perspective.

(Continued from page 15—EZ Acres.)

Cornell University's Integrated Pest Management (IPM) Guide for Organic Dairies A. Fay Benson, Extension Small Dairy Technologies Educator

Even though the title says the guide is for organic dairies it can be a benefit to all livestock farmers. The management and practices it contains can help reduce the need and protect the efficacy of chemicals used on conventional farms. The guide provides an outline of practices for the management of external arthropod pests such as flies, lice, mites and grubs on organic dairy farms. Left uncontrolled, these pests negatively impact animal health and production. While organic production has recently increased, information about how to farm organically is still in considerable need of more research. This guide compiles the most currently available information on dairy arthropod pests, but acknowledges that effective means of organic control are insufficient for some of these pests. As new information becomes available, it will be incorporated into future revisions of this guide. While critical to organic dairy production, this guide does not include information on nutrition, feed stocks, or internal parasites of dairy cattle. This guide is broken into sections beginning with a brief overview of the certification process. Sections on fly management are broken down into those found in and around confined areas and shelters, as well as those found when cattle are on pasture. Each section reviews the biology and importance of each pest along with monitoring and assessment recommendations followed by pest management techniques. A separate section addresses management of lice and mange. Specifics on biological control, trapping, and pesticide options conclude the guide. This guide uses the term organic integrated pest management (IPM), which utilizes a series of decision-making steps to manage pests. To ensure success, dairy producers need to properly identify pests, understand pest biology, monitor pest populations, assess the need for control, and then reduce pest populations to acceptable levels through cultural, biological, mechanical, and chemical management techniques.

Potential Annual Loss in Milk Profits Due to Accumulated Stresses from all Arthropod Pests

Percent Loss	Loss/Cow/Yr	Loss/100 Cows*
5 %	\$238	\$23,800
10 %	\$476	\$47,600
20 %	\$952	\$95,200

*Estimates of annual losses are based on U.W. Department of Agriculture data for all dairy pests and assume 17,000 pounds of milk per animal per year at a price of \$28/cwt.

For a copy of the guide go to: https://

ecommons.cornell.edu/bitstream/handle/1813/42899/2016 -org-dairy-NYSIPM.pdf?sequence=1

ECONOMIC IMPACTS

Controlling arthropod pests on dairy cattle improves their general living conditions, which can directly affect farm profitability. Inadequate pest control can cause pain and irritation to animals resulting in reduced milk production and a decrease in the rate of weight gain due to interrupted grazing time. Animal health is compromised through blood loss, hide damage, and hair degradation as well as providing routes for diseases such as pink eye, Thelazia eyeworms, and mastitis (1, 2, 3). It is difficult to assess the impact of any one pest species on overall production, but an accumulation of multiple stresses from pests throughout the year will reduce production over time, with conservative estimated losses of five percent or more. Younger animals are particularly at risk since stress can interfere with early weight gain, resulting in a negative lifetime production. For estimates see the chart above.

Composting Webinars – please visit <u>http://conservationwebinars.net/</u> to sign up for either webinar.

- <u>Wednesday, September 12, 2018</u> 2:00 pm eastern/1:00 pm central: **Composting The Basics.** This webinar will provide viewers with an understanding of the principles of successful composting of animal manure, bedding, food wastes and other types of organic material. Composting is a known strategy for management of animal manure as part of the agricultural waste management system. The principles of proper composting will be discussed. Discussions will also include the composting process, trouble shooting techniques, what is considered compost, how properly composting organic waste impacts food safety.
- <u>Wednesday, September 26, 2018</u> 2:00 pm eastern/1:00 pm central: **Composting Animal Mortality.** This webinar will provide viewers with an understanding of the principles of successful composting of animal mortality in routine and emergency situations. Mortality composting is a known strategy of the agricultural waste management system. The principles of proper mortality composting will be discussed. Discussions will also include the composting process, trouble shooting techniques, what is



2018: Bunker Silo Safety Reminder from the OSHA Work Group (NYCAMH, NEDPA, NYFB and Cornell PRO-DAIRY).

- Document and retain a record of all safety training with dated sign-in rosters. Farm specific safety concerns and other issues: narrow roads, soft shoulders, main highways, traffic, spilling silage or tracking mud on roads, etc.
- Review rules of the road, safe speed, specified routes and alternatives to reduce neighbor irritation, beware of complacency- the 22th time at the same stop sign can get boring, but still need to stop!
- Get a good night's sleep. Tired operators are more likely to make mistakes and especially so when combined with complacency. According to research, most people require 8-9 hours of sleep per night for optimal performance. Too little sleep, especially over consecutive nights, will result in impaired function and significantly reduced reaction time.
- Carry water and snacks/stay hydrated. Take breaks periodically.
- Stay in communication, let others know of hazards when they are observed.
- Stay off cell phones while driving. Hands-free cell use is legal, but can still be a distraction.
- Stay in trucks or equipment when waiting. If personnel must exit, radio other operators.
- If personnel are on the ground, they should never walk out in front of or behind any machine or truck without first making eye contact with the operator.
- No extra passengers unless in training.
- Make sure lighting is adequate for all work performed after sunset.
- Moving poorly marked or lighted equipment at dusk is especially dangerous- use an escort vehicle to reduce risk.
- All tractors and machinery that travel less than 25 mph on public roads need to have a properly mounted SMV (Slow Moving Vehicle) emblem. SMV emblems need to be clean and not faded, must be mounted in the center of the rear of the machine (or as close to the center as possible), and be 2' to 6' above the road surface.
- Completely shut down machinery when clearing debris. Remove and pocket ignition key so no one can restart if you are not visible. Machinery that is shut down for service can be tagged out at the steering wheel, as "Do Not Operate".
- Make sure that staff use the proper personal protective equipment, such as hearing protection in noisy areas.

Pre harvest:

- Check over trucks and equipment, ensure tires are at proper inflation and have adequate tread - change excessively worn tires, check if all lights are functioning, recheck each day before work starts. Trucks need to be equipped with fire extinguishers and safety triangles or flares.
- Provide fire extinguishers on larger tractors and self-propelled harvesters and be sure all know where they are located.
- Make sure road safety features meet the legal requirements.
- Check field entry routes for wash outs and culvert problems, clearly mark entries when road ditches exist adjacent to culverts.
- Mark driveways with flags so that drivers do not have to guess where the edge is.
- Check common routes for road crew activity or other new issues.

- Provide hi-visibility clothing or vests to staff to help prevent run over incidents.
- Daily: remind drivers, packers and chopper operators to be safe, use safety belts and take no unnecessary risks.

Filling:

- If new silage is being added to old silage, mark where the two materials are joined: the joint areas can be very unstable during silage removal and can collapse without warning because the silage will not be interlocked at this point.
- Do NOT put new silage on top of existing silage that has a plastic covering in-place; although this may seem in the best interest in forage quality, it can result in excessive hazard of face collapse during feedout. Extra caution is warranted with any activity in these areas.
- Pile height should not exceed the reach of the unloading equipment. Filling staff should be told the target pile height.
- Packing tractor(s) should be ROPS equipped, operators belted in.
- Rollover hazard is obvious. Side slope steepness is an important safety concern. There are many factors that influence safe operating gradient.
- Minimize lateral side slopes as much as practical and strive to be less than 6:1 sideslope, beware of soft spots.
- Safest packing is achieved when driving up and down the pile: some references suggest no more than a 3:1 slope in the direction of travel for this type of operation. As your farm changes, please consider how to size and organize bunker silos so that pile height and slope allow packing equipment to drive <u>safely</u> over all sections of the pile.
- Only the most experienced equipment operators should pack.
- Provide new packing operators with proper training.
- Due to tip-over hazard, for hydraulic dump bodies, NEVER back up onto the pile to dump, rather dump in pre-designated areas established to avoid truck/packing tractor collisions.
- Inform all staff that only authorized personnel should be in the silo filling area, extra people should be kept out. Make sure appropriate signage such as "No unauthorized personnel" and "Danger" is posted visibly.

Covering crew:

- Conduct safety meeting before going up onto the piles.
- Designate those that will work near the edge, all others stay away!
- Make sure workers are not wearing slick surface shoes.
- Remind workers to watch out for each other and no horseplay on top.

At the end of the day:

Consider having short end-of-day meetings to celebrate work accomplished and review any observed or perceived safety issues.





Many of you are aware that companies that have been picking up dead stock from farms have halted pick-ups. The NYS Department of Agriculture and Markets (NYSDAM) is discussing the situation with the companies to determine a course of action regarding the disposal of downed and dead animals. In the meantime, New York producers will need to consider other methods of disposal. The following information is provided as guidance; however, these activities may also be subject to local law.

-from David Smith, DVM Director, Division of Animal Industry New York State Department of Agriculture and Markets 10B Airline Drive, Albany, NY 12235 (518) 457-3502 l David.Smith@agriculture.ny.gov http://www.agriculture.ny.gov

On-Farm Burial

On-farm burial may be a viable option for many farms. New York Agriculture and Markets Law has the following provisions for disposal. These provisions are applicable to all farms, including farms operating under a Concentrated Animal Feeding Operation (CAFO) permit.

https://www.agriculture.ny.gov/AI/AILaws/Article_26_Circ_916_Cruelty_to_Animals.pdf

§ 377. Disposal of dead animals.

- (1) The carcasses of large domestic animals, including but not limited to horses, cows, sheep, swine, goats and mules, which have died otherwise than by slaughter, shall be buried at least three feet below the surface of the ground or otherwise disposed of in a sanitary manner by the owner of such animals, whether the carcasses are located on the premises of such owner or elsewhere. Such disposal shall be completed within seventy-two hours after the owner is directed to do so by any peace officer, acting pursuant to his special duties, police officer, or by a designated representative of the commissioner.
- (2) Notwithstanding section forty-one of this chapter, any violation of this section shall constitute a violation. This section shall not apply to animal carcasses used for experimental or teaching purposes.

The Department also recommends the following considerations for onsite burial:

• Locate onsite mortality management activities so that prevailing winds and landscape elements minimize odors and protect visual resources.

• Locate the facility down-gradient from springs or wells whenever possible; at least 200 feet from wells and open water; above the 100-year floodplain elevation; and avoid areas with seasonally high-water tables. (Please note that State law requires that the highest part of the buried animal must have at least 3 feet of soil over it and burial must occur within 72 hours.)

- Onsite mortalities should not be disposed in liquid manure storages.
- Any farm operating under a CAFO permit must carefully observe the provisions of the permit and the farms Comprehensive Nutrient Management Plan (CNMP), including working with their AEM Certified Planner.

On-Farm Composting

You may also choose to compost dead animals.

Farms operating under a CAFO permit that choose to compost must do so in accordance with the 2014 Cornell Waste Management Institute recommendations "<u>Composting Animal Mortalities</u>" or the NY 316 NRCS Standards as planned in their CNMP.

For non-CAFO farms, you may compost mortalities on-site without a permit using <u>2014 Cornell Waste Management Institute</u> recommendations. In addition, under State law, up to 10 carcasses per year can be from <u>off-site</u> sources, and the animal carcasses must be placed within the compost pile on the day received (6 NYCRR Part 360-3.2(a)(4)). To handle additional off-site animals, the farm must obtain a <u>solid waste management facility registration</u> under 6 NYCRR Part 360-3.2(b)(3).

(continued on bottom of p. 7—Animal Health Best Practices)

How to Determine Your Ideal Seeding Rate for Cereal Rye

Zachary Larson, Field and Forage Crops Educator, Penn State Extension

Cereal rye is widely used due to its ability to establish late in the season and can still be successfully established in most of Pennsylvania into October. In dry years, when lower than expected yields result in un-captured soil nitrogen (N), Nscavenging plants such as cereal rye can be especially important in consuming excess nutrients and releasing them the following spring. However, the traditional seeding rate of 2 bushels per acre should be more closely reviewed, with spring management objectives helping to determine seeding rates.

Know Your Seeds per Pound

A study of rye planting dates at the Big Flats Plant Materials Center in New York showed seeds per pound for rye varied from under 12,000 to over 33,000 based on the cultivar. Assuming traditional small grain seeding rates of 1.5 million viable seeds per acre and a germination of 85%, pounds of seed per acre would vary from 53-147 to hit the 1.5 million seed mark. While many older cultivars may have been accurately planted at 2 bushels per acre, knowing your rate of seeds per pound and the germination rate of the seed can better help determine how many total pounds should be hitting the field.

Follow Traditional Seeding Rates for Late Planting and Early Termination

The traditional seeding rate of 1.5 million viable seeds per acre is still a good starting point for establishing adequate ground cover when rye is planted later in the fall or in northern areas of the state where little fall growth is expected. This is particularly true when termination is performed well ahead of planting, when plants are younger and shorter. So if you're managing rye for winter cover and are terminating early, you may only need to consider seeding at rates of less than 2 bushels per acre when your number of seeds per pound is above 16,000.

Less May Be More if You're Applying Manure

A study of three rye planting rates and three poultry litter rates in Pennsylvania and Maryland showed that poultry litter application had an effect on rye biomass while planting rate had relatively little effect. In this case, biomass yields were similar at seeding rates of 80 and 186 pounds per acre when litter was applied. So for those applying manure to rye this fall or in the spring, a lower planting rate may be acceptable for achieving high forage yields, providing erosion control and meeting soil health objectives.

More May Be Necessary if You're Looking for Weed Control

The same study showed that the increase in seeding rates from 80 to 186 pounds per acre resulted in greater weed control when the rye cover was rolled and crimped. This was likely due to increased ground cover early in the season, owing to greater plant density. A commonly accepted target for good weed control from rolled and crimped rye is 7,000-8,000 pounds per acre of dry matter, which can be achieved with 1.5 million viable seeds per acre, with planting dates as late as mid -October, depending on location and termination date in the spring. However, it should be noted that rolled and crimped rye may not suppress all weeds and that follow-up treatments may be needed later in the growing season.

Higher Rates May Not Be Necessary if Soil Health is Your Objective

For those looking to use a late terminated rye cover as a means of maintaining living roots throughout the year and improving soil structure, higher seeding rates may not be as important. Veteran no-tillers that use rye as a soil health tool may go as low as 30-60 pounds per acre, although due to smaller seed sizes, some may still be planting close to 1 million seeds per acre. Those that plant at lower rates cite reduced input costs, improved light penetration and airflow to the soil surface resulting in quicker drying in the spring and ease of planting when going into a standing cover crop, commonly referred to as "planting green."

So before the drill hits the ground this year, determine what your objectives are and what seed you intend to plant. Depending on your rotation, need for spring forage and manure application practices, you may even want to use multiple planting rates. By considering your needs and resources now, you can better obtain the ideal cover crop stand when spring rolls around.

(Continued on bottom right column p 15- Cover Crops)

Animal Health Best Practices (cont'd from page 6) The Department strongly recommends the following precautions:

- Be decisive when it's time to cull an animal. Make the decision early while the cow is still marketable. With disposal being more difficult now, it's more likely that every dealer, market, and slaughter buyer will be refusing marginal (weak/ nonthriving) calves and cull cows for fear that they will not make it successfully all the way to slaughter.
- If chemical euthanasia is used to dispatch an animal on the farm, the option for composting might be restricted due to chemical exposure to birds of prey, scavengers and neighbors' free-roaming dogs. You must take precautions to be sure that dogs, cats, and wildlife cannot gain access to the animals being composted.
- Do not delay burial or encasement in a composting bed. The longer you wait to deal with a mortality, the more difficult the carcass will be to handle and the chances of spreading disease will increase.

Lameness - Early Detection and Prevention

Betsy Hicks, Area Dairy Specialist

When asking producers about lameness, often the response I get is in the form of a yes/no answer. "Yes, she's lame", or "No, she's not lame." The problem with this is, lameness is not a yes/no question; lameness covers a spectrum of soundness to slightly lame to severely lame, and there are several minute changes in the way a cow moves that can cue us in to whether she's starting to feel a sore foot coming on.

In tie-stall herds where cows don't walk frequently, we can focus on scoring cows while standing in the stall - a system that can often give false positives as well as false negatives. In this scoring system, a cow that shows us two or more of the behaviors would be given a lame diagnosis. Again, though, this system gives a yes/no response when in reality, we can diagnose the onset of lameness far sooner if we can watch cows walk. These include such behaviors as:

(1) Weight shift: regular, repeated shifting of weight from one hoof to another, defined as lifting each hind hoof completely off the ground at **least twice**. The hoof had to be **lifted and returned to the same location** and did not include stepping forward or backward.

(2) Stand on edge: the cow places one or more hooves on the edge of the stall while standing stationary. This did not include times when both hind hooves were in the gutter or when the cow briefly placed her hoof on the edge during a movement or step.

(3) Uneven weight: repeatedly resting one foot more than the other, indicated by the cow raising a part or the entire hoof off the ground. This did not include raising of the hoof to lick or during kicking.

(4) Uneven movement: uneven weight bearing between feet when the cow was encouraged to move from side to side. This was demonstrated by a more rapid movement by one foot than the other or by an evident reluctance to bear weight on a particular foot.

(5) Visible wart or hoof swelling.

If we are able to watch a cow walk, we can give her a locomotion score as long as the place where she is walking is flat, not slippery, and allows for calm and deliberate strides. The UBS Dairy Cattle Gait Scoring System is described in the chart on page 9. Scores 1 and 2 describe behaviors of sound cattle – mainly evenly tracking of hooves, symmetrical gaits, freely flexing joint and steady head carriage.

When we move to score 3, we start to notice that these cows start to have the ability to move compromised in some way. Joints may seem stiff, gait may be somewhat asymmetrical, and hind hooves won't track up evenly. If we can watch cows for these small signs and address the issue early, we can stop her from becoming a score 4 or 5. If you watch closely, you may be able to start to discern a slight limp in one limb that may be the issue.

Score 4 is a cow that most producers would confidently describe as 'lame', but in reality, this cow was showing signs of the onset of lameness days or weeks earlier. Score 5 cows do happen on herds from time to time, but hopefully these girls are getting hospital care and detailed attention to her feet. If we can identify lameness sooner, we can start to uncover the reasons why cows start to develop sore feet. Some producers know their laneways to pasture are bony and result in abscesses. Others know their exercise lot gets stones brought up on concrete and cows develop bruises. Other are struggling with warts and are frustrated that their foot bath system doesn't seem to be keeping up with prevention like they feel it should. Once you've identified the reasons why your cows develop sore feet, we can start troubleshooting how to make the system better.

In terms of footbaths, spending time watching cows exit the parlor and go through footbaths is time well spent. In order for footbaths to work, cows need to get a minimum of two dunks per foot in that bath. Oftentimes, I see footbaths set up on a parlor exit with no gates around them. When watching cows leave, the front feet each get one dunk, a back foot gets dunked once, and the other back foot passes right over the bath without a dunk. If you're using copper sulfate, and your feet aren't somewhat blue – you should watch your cows move through the bath.

So how do we make the footbath system better? Move the baths to an area where it's flat, well-lit, and we can make cows go through the bath so they can't bypass it with some feet. This movement doesn't need to cost money in concrete, either. Simple gates and plywood sides around this bath help move cows efficiently and effectively through the bath while keeping bathwater in the bath, and are easy to take down to clean on days where the bath isn't being run. By keeping it well-lit, cows will be able to see where they're going and won't hesitate in getting through the bath. Simple tweaks to your system may help you get better wart control and better results without costing anything. We can even locomotion score cows before and after making a change to track any improvement.

Other considerations for footbaths include:

- Making sure you have the right concentration for the product you're using
- Ensuring employees are trained correctly on how to fill baths
- Doing treatment baths on consecutive days
- If feet are really dirty, setting up a soap bath for a couple days before setting up your treatment baths

In any economic situation, attention to detail on locomotion and foot care will always reward positive results. In poor economic times, ensuring your footbaths are working for you just makes sense. Give me a call – I'll gladly come out to see your system and give feedback on cows, locomotion and footbaths no matter your system.

UBC Dairy Cattle Gait Scoring System			
Score	Description	Behaviour	
1 Sound	Smooth and fluid movement	 Flat back when standing and walking No swinging out Symmetrical gait All legs bear weight equally Joints flex freely Hind-hooves track up to fore-hoof prints Head carriage remains steady as the animal moves 	
2	Ability to move freely not diminished	 Flat or mildly arched back when standing and walking Minimal swinging out Slightly asymmetric gait All legs bear weight equally Joints slightly stiff Hind-hooves do not track up perfectly but shortened strides are uniform Head carriage remains steady 	
3	Capable of locomotion but ability to move freely is compromised	 Flat or mildly arched back when standing, but obviously arched when walking Swinging out Asymmetrical gait Slight limp can be discerned in one limb Joints show signs of stiffness but do not impede freedom of movement/ Hind-hooves do not track up and strides may be shortened Head carriage remains steady 	
4	Ability to move freely is obviously diminished	 Obvious arched back when standing and walking Swinging out Asymmetrical gait Reluctant to bear weight on at least one limb but still uses that limb in locomotion Strides are hesitant and deliberate and joints are stiff Hind-hooves do not track up and strides are short Head bobs slightly as animal moves 	
5 Severely Lame	Ability to move is severely restricted Must be vigorously encouraged to stand and/or move	 Extreme arched back when standing and walking Swinging out Asymmetrical gait Inability to bear weight on one or more limbs Obvious joint stiffness characterized by lack of joint flexion with very hesitant and deliberate strides One or more strides obviously shortened Head obviously bobs as animal moves 	

South Central NY Dairy & Field Crops Digest

Leadership on the Farm

This column explores how leadership theory and practice relate to farm business management. By Mary Kate Wheeler, Business Management Specialist

What is your leadership style, and why does it matter?

When people on your team are looking to you for direction and motivation, your leadership style matters. Your individual leadership style encompasses how you make decisions and how you direct others. Early research on leadership identified three main styles, along with their implications for team performance. These leadership styles are outlined below.

Today, leadership theory suggests that there is no one best or worst style, but that different styles are appropriate for different situations. Situational leadership requires an ability to adapt your approach to fit the circumstances at hand. This article can help you to identify your natural leadership style, and begin to adjust your style when flexibility is needed.

The Authoritarian Leader

If you tend to provide direct and detailed instructions for how a task should be done, then you might have an authoritarian leadership style. This type of leader is maintains a sense of authority by exerting power and control when it comes to making decisions and managing people. Authoritarian leaders tend to make decisions on their own, without seeking input from others. This leadership style is characterized by a "command and control" approach that creates a clear distinction between leader and follower.

Authoritarian leadership is advantageous in situations that require quick and decisive action, like emergency response, for example. This style is also good for guiding new or inexperienced workers. Authoritarian leaders provide clear expectations, so workers know exactly what to do. However, this leadership style discourages creativity and independent problem solving. In the long run, authoritarian leadership can harm morale and productivity if team members feel that their ideas are not valued, or that they have no say in decisions that directly affect them.

If you lean toward an authoritarian leadership style, you may be shouldering more than your share of stress and responsibility in your operation. Find ways to support and reward autonomy, and encourage problem solving in your workers, especially those who are skilled and experienced. Look for opportunities involve your team members in decisions that are related to their work. Building the capacity of your team to make good decisions and solve problems independently can improve morale and productivity. In the long run, this may take some of the management load off your plate.

The Democratic Leader

Do you offer guidance to your team, but also encourage input and ideas from team members? If so, you may have a democratic leadership style. This style is characterized by engaging team members to participate in decision making. A democratic leader creates opportunities for followers to provide input, but the leader still has the final say. This approach is highly effective at fostering collaboration, creativity, and a shared commitment to team goals.

A democratic leadership style is especially useful when team members bring expertise from different areas, as often happens on a dairy. It may take longer to reach a decision when more people are involved. Yet, in the long run, engaging worker participation can improve team morale and performance. The key to adopting a democratic leadership style involves listening to team members and encouraging their input. It may take time for workers to feel comfortable sharing ideas, so the leader must be consistent in this effort.

The Laissez-Faire Leader

If you prefer a hands-off approach that allows team members to work independently and make their own decisions, you may be a laissez-faire leader. This leadership style is characterized by delegating authority to followers, who have freedom to make decisions and solve problems on their own. Laissez-faire leaders provide very little guidance, yet they still take responsibility for the actions and accomplishments of their team.



Laissez-faire leadership can produce excellent results when team members are highly skilled, motivated, and capable. However, research suggests that this style often results in low productivity. Lack of clear expectations can cause workers to become confused and uncertain about their role on the team, leading to poor performance and low job satisfaction. A hands -off leadership style may work well when leading a team of experts, but most teams perform better with a higher level of direction and supervision.

Guidelines for Nitrogen Management of 4-5 Cut Intensively Managed Grasses

Nutrient Management Spear Program, Cornell University With Input From The NMSP Internal and External Advisory Committees

grass hay per year (versus 3-4 cuttings) and managers have asked for updated nitrogen (N) and manure application guidelines that reflect this reality. Generally, when a field is 50% or more grass, it should be managed as a grass. Fields with 50% or more legume should be managed with a focus on legume requirements. In most conditions and given adequate rainfall, supplemental N to grass stands will increase yield and protein content. In addition, the dense sod formed by grass root systems substantially limits N losses below the root zone.

At first green-up in early spring, while manure can be the N source, fields are often too wet to handle traffic from heavy manure tankers and grass may be more responsive to the readily available N in urea or UAN fertilizer. As with the 3-4 cut system, N allocation for a 4-5 cut system can be 75-100 pounds of fertilizer N per acre at green-up, followed by 50-75 pounds of N per acre after first cutting, and 50 pounds N per acre after subsequent cuttings for a total of 275 pounds of N per acre. Research suggests that the N allocation after each cutting is less important than the total N applied at green up and after first cutting, so producers can choose to shift the N allocation per cutting, using 275 pounds of N per acre from

Dairy producers are increasingly able to harvest 4-5 cuttings of manure and/or fertilizer as an annual upper limit. For example, an application of 125, 100 and 50 pounds of N per acre could be made at green-up, after first, and after second cutting, respectively.

> If manure is used, the standard manure N credit charts should be employed. The example below shows 50 pounds of N credit per acre with a surface application of 9,500 gallons per acre based on a liquid manure sample with 15 pounds of organic N and 10 pounds of inorganic N per ton of manure. This example does not include organic N credits from past manure applications. In this example, the 9,500 gallons also contain 38 pounds of P2O5 and 95 pounds of K2O. The latter could cause elevated potassium levels in the crop and may not be suitable for dry cow rations. Injection of manure, instead of surface application, reduces the rate needed to meet 50 pounds of N per acre to 5,500 gallons per acre in this example. This reduction in rate also lowers the P application to 20 pounds of P2O5 per acre and the K application to 55 pounds of K2O per acre.

> Three items of caution: (1) odors resulting from surface application of stored manure can impact neighbors and may limit application opportunities; manure injection equipment can greatly reduce

								1 .
🔊 manure_Nutrient_credits [Compatibility Mod	e]						Ξ Σ	odor issues
								without harming
Crop available nutrients from ma	anure - current year	v1.2 October 2005	GL Albrec	ht, QM Ket	terings, and	KJ Czymmek		the stand; (2)
Manure Analysis	Court				Fertilizer	value of Mar	iure	some farmers
Aninai Species	lbs/ton				Cost per p	ound of nutri	ont	have reported
Total N	9.4	lbs/ton			cost per p	N \$ 0.38		crop damage afte
Ammonium-N	3.6	lbs/ton			P ₂	D _c \$ 0.27]/іь	use of high rates
Organic-N	5.8	lbs/ton			K	O \$ 0.19	/lb	of manure.
P ₂ O ₅	4	lbs/ton			Note: the ac	tual value of ma	nure	farmers accent
K ₂ O	4.6	lbs/ton			nutrients, cal	culated below,	depends	full roomongibility
Total Solids	14	%			on the cost o	of application an	d the need	
Density	8.34	lbs/gallon			for N, P ₂ O ₅ a	ind K ₂ O by the o	rop.	for crop injury of
Past Manure Applications					1			other issues that
Units	tons		N Credit		Past Applic	cations		may arise when
Applied last year	20	tons/acre	14	lbs/acre		\$ 5.29	/acre	electing to use
Applied 2 years ago	15	tons/acre	4	lbs/acre		\$ 1.65	/acre	high rates of
	Total N available fro	om past application	s 18	lbs/acre		\$ 6.94	/acre	manure: (3) over
Current Manure Application		_						time multiple
Units	tons							applications of
Application Rate	15	tons/acre	_					applications of
Application Method & Timing	Spring incorporate	d within 3 days		114	Current Ar			manure in the
Manure Organic-N		Ammonium-N orodi		lhc/sere	Current Ap		laoro	same crop year
Availability Chart		Organic-N credi	it 30	lbs/acre		\$ 11.57		will cause soil P
	Total N available from	current application	n 53	lbs/acre		\$ 19.98		accumulation and
Nanure Ammonium- N Availability Chart	Total P ₂ O ₅ from	current application	n 60	lbs/acre		\$ 16.20	/acre	may eventually
	Total K ₂ O from	current application	n 69	lbs/acre		\$ 13.11	/acre	restrict future
Crop Nutrient Requirements	2	N	utrient Bala	ance				manure spreadin
N N	90	lbs/acre	-19	lbs/acre	Deficit	Fertilizer Valu	e Chart	because of P
Crop Requirements	20	lbs/acre	40	Ibs/acre	Surplus			index guidelines
Chart K ₂ O	45	lbs/acre	24	lbs/acre	Surplus	Nutrient Ba	ance	mach guidennes.
4			-		-			1

stand; (2) e farmers e reported o damage after of high rates nanure; ners accept responsibility crop injury or er issues that arise when ting to use n rates of ure; (3) over e, multiple lications of ure in the e crop year cause soil P umulation and eventually rict future ure spreading ause of P ex guidelines.

South Central NY Dairy & Field Crops Digest

INSURING CORN SILAGE

2018 Crop Year, NY

If you have a crop failure or prices drop, crop insurance can help you Crop insurance is a safety net for farmers that helps you manage risk. make ends meet, keep feeding your animals, and plant again next year.



Types of policies:



declines in both yield and prices; you Revenue protection insures against revenue loss caused either by crop can receive a payment because of failure or by low prices.

corn as grain, you can choose between Corn for grain: When insuring your revenue protection or yield protection





only varieties can only be insured using yield protection.*

.....



Change of plans? If you insure as grain and then chop for silage (or visa versa), you can still file an insurance claim. However, your losses will be assessed by bushels, and corn insured as silage will be assessed by tons. assessed according to how you insured it: corn insured as grain will be Make sure to talk to your insurance agent before you harvest.

Cornell University delivers crop insurance education in New York Diversity and Inclusion are a part of Cornell University's heritage. State in partnership with the USDA Risk Management Agency. We are an employer and educator recognized for valuing AA/

EEO, Protected Veterans, and Individuals with Disabilities.





Yes! Corn can be insured as grain or silage in all New York counties.

Causes of Loss

standard management practices. Covered natural causes range from Silage crop insurance protects against losses due to most natural drought to flooding and from plant disease to wildlife damage. causes as long as the loss could not have been prevented using

Prevented Planting

If you cannot plant on schedule or have to replant due to weather in your local area, you may be eligible for an indemnity payment. Keep your agent informed of any planting delays or crop losses throughout the growing season.

Deadlines

- March 15: Enrollment deadline to sign up for crop insurance.
- July 15: Acreage reporting date. Report planted acreage to your agent.
 - August 15: Premium payments are due. Note that premiums are due closer to harvest time, rather than at enrollment.



If a loss occurs, you should:

- Protect the crop from further damage by providing sufficient care;
- discovery of damage (but not later than 15 days after the end of the Notify your crop insurance agent within 72 hours of your initial insurance period); and
- Leave representative samples intact for each field of the damaged unit.

Cost Sharing

Yield protection insures

yield; you can receive a

that you have a given

for a portion of your premium costs. This support covers up to 80%** of your To make crop insurance affordable for farmers, the federal government pays premium. ("Coverage level" refers to the maximum percentage of your total level of 50%. Support decreases with higher coverage levels. At the highest premium (meaning you only pay 20% of the cost) at the lowest coverage coverage level, 85%, the federal government pays up to 53%** of your expected yield or revenue for which you can file a claim.)





Find crop insurance information at ag-analytics.org/cropinsurance Learn More

Find an Agent

Ask a neighbor for a recommendation or use the Agent Locator tool at rma.usda.gov/tools/agent.html * Unless silage-only and grain varieties are insured jointly under a revenue protection policy. In this scenario, silage-only varieties are still only protected from yield declines. Ask your insurance agent for more details.

** These are the support levels for producers using enterprise units. Support is lower if using basic or optional units.

New Payments for Dairy Producers Coming from USDA -Farm Service Agency Mark Stephenson, Dairy Markets and Policy, University of Wisconsin

You may recall that a couple of months ago USDA Secretary Purdue announced that \$12 billion would be made available for producers and growers who have been hurt by retaliatory tariffs. There were few details offered about the program except that the funds would be used in a three-pronged approach. First would be direct payments to folks who's price has been affected. Second, some of the funds would be used to purchase products from the market to be used in food need programs. And third, monies would be used to promote exports to other countries.

We just received news about additional details of the program and the most interesting item will be the direct payments to producers. Dairy producers will get 12¢ per cwt based on their historic milk production. This is the same production figure as used in the Margin Protection Program (MPP), so if producers already have certified that number (highest annual production in 2011, 2012 or 2013) with FSA they don't need to do it again. If they haven't, then they will need to provide evidence of production in those years. Producers with Adjusted Gross Incomes (AGI) of \$900K or more will not receive any payments and the payments for dairy producers are capped at \$125K per entity for milk production. It looks as though they could get 50% of the payments right away (in September) and

the other 50% would be decided later (maybe in December) based on whether trade deals are negotiated. A farmer would have to have been in production on June 1, 2018 to be eligible.

Dairy farmers may be eligible for crops payments too. Crops are eligible for up to another \$125K per entity (no more than \$250K in total) with 1¢ per bushel for corn, \$1.65 per bushel for soybeans, and 14¢ per bushel for wheat. I asked FSA about whether crops grown to be fed to cows would also be eligible and they indicated that it was their understanding that they would be as long as they have certifiable yields. That seems like double-dipping to me, but that was their understanding at this time. We will need to let farms know so they can estimate yields of chopped corn, and run trucks of shelled corn and soybeans across the scale or measure it in the bin. (The AGI Eligibility rule pertains the same. There may be a payment cap applies to the sum of all payments or payments by type.-A. Novakovic)

Watch for notices from your FSA office. Signup for the program will start as early as September 4 at your local FSA office. FSA is conducting training for administration of the program today.

Dairy Trade Agreements

Dr. Andrew Novakovic, Dairy Markets and Policy, Cornell University

It seems we are getting close to a new bilateral trade agreement with Mexico, aka NAFTA reform. There are more than a few things that are unknown or unsettled. I think we have a pretty good idea about the dairy deal, which mostly is the same deal we've had before. The bigger concerns have been manufacturing across borders and auto manufacturing and assembly in particular. It seems that Mexico and the Trump Administration are on the same page. It is unclear if there will be push back from Congress as more details become known. More uncertain is whether Canada will seriously participate, acquiesce to Trump Administration demands, insist on going back to the table with Mexico and/or whether Congress will go along with a bilateral deal and worry about Canada another day. Keep in mind that Canada also has an agreement with Mexico under the NAFTA umbrella. Obviously the dairy issues are quite large in the Canada discussion.

The basic outline of the apparent deal with Mexico would continue the current arrangement of no dairy foods tariffs in either direction. There continue to be sanitary requirements, which I don't think have been particularly controversial or problematic for dairy in the past. It won't be any easier to get Mexican farm milk to a US plant; nor will it be any easier to do the same in the opposite direction.

The reaffirmation of no tariffs does not, however, solve the problem of Mexico's retaliatory tariffs currently in place on dairy. Mexico cannot be expected to withdraw them until we withdraw the tariffs on steel and aluminum. To my knowledge, these have not been changed by virtue of the latest discussions. One would think that a final agreement would result in President Trump rewarding them with an elimination of the steel tariffs but this is unknown at this point.

There is also some new language related to European style protected names for dairy foods, so-called Geographic Indications. Apparently, the new agreement would specify particular products that Mexico would agree to NOT protect. This is not an issue of Mexico protecting Queso Fresco; it is more their agreeing to a trade agreement with the EU that binds them to certain EU labels. I don't know for a fact, but it seems that we have asked for open trade on common named products, say parmesan, but, by not including it, we would accept a restriction on San Fidalgo or some other thing we don't make anyway. This is actually a pretty big deal as Mexico has made agreements with the EU just this year.

For additional details: <u>http://trade.ec.europa.eu/doclib/press/</u> index.cfm?id=1830

High Moisture Corn Harvest and Storage Considerations Mike Rankin, Crop and Soils Agent, UW Extension-Fond du Lac County

Even the best plans to ensile high moisture corn at the proper moisture level are sometimes thwarted by weather and time constraints. These types of situations prompt the question, "What can I get away with?" Here are some factors and suggestions to consider when making decisions regarding the harvest and storage of high moisture corn.

Moisture

Consider the type of silo first. High moisture corn can be stored in conventional, oxygen limiting, bunker, or bag silos. Recommended moisture levels for these silo types are presented in Table 1.

Table 1. High Moisture Corn Storage in Bag, Bunker,Conventional, and Oxygen Limiting Silos

Conventional Top Unloading Silos, Bunkers, & Bags

	Corn Kernel Moisture, %			
	Minimum	Desired	Maximum	
Ear Corn	26	32-36	40	
Shelled Corn	26	28-32	36	
D				

Bottom Unloading Oxygen Limiting Silos

	Corn Kernel Moisture, %			
	Minimum	Desired	Maximum	
Ear corn –rolled*	26	28-32	36	
Shelled corn	24	26-28	32	

*OL Silo with Forage Unloader

In years when crop maturity has lagged behind normal or frost puts an early halt to the growing season, corn may be wet (or dry slowly) and maximum moisture percentage to preserve corn becomes a primary issue. For corn stored above 40% moisture, an undesirable fermentation may take place and yeast may proliferate along with high ethanol levels. Animal acceptance may be poor with this type of fermentation. Additionally, harvesting high moisture shelled corn above 32% kernel moisture for oxygen limiting silos equipped to handle high moisture shelled corn may result in unloading problems.

Processing

Most high moisture corn is processed (rolled or ground) before going into the storage unit. The two exceptions to this rule are shelled corn being stored in an oxygen limiting unit and corn that is excessively wet (near 35% kernel moisture). Take care not to over process corn that is Ver the desired moisture level. It is easy to get excessively fine high-moisture corn that may result in rumen acidosis, fat test depression, off-feed problems or an increased incidence of displaced abomasums. As the corn approaches optimum moisture content, increase the degree of processing.

Harvest Recommendations

Check corn kernel moisture from different fields and determine if the grain can be removed from the cob (shelled corn). Harvesting high moisture corn as shelled corn as compared to

snaplage or high moisture ear corn may reduce mycotoxin risk. Harvest corn nearest to optimum moisture contents first and place at the bottom or back of storage structures. Corn with higher than desirable moisture levels may be more of a problem at feed-out during the warm months and is best to put on the top or front of the silo for winter feeding. Very wet corn may be prone to aerobic instability (heating) upon removal from the silo. Plan to feed higher risk (wet or moldy) high moisture corns during the coldest months to facilitate slow removal rates if needed.

Corn with significant mold on the kernels and cob is best harvested and stored as high moisture shelled corn (rather than ear corn). Some producers have taken moldy corn and dried it down to storable moisture while screening off the fines. Where drying is not an option, propionic acid is recommended. The propionic acid will not lessen any problems from the mold, but will likely prevent mold problems from getting worse.

If high moisture corn is stored in bags, locate bags away from trees, long grass, and keep snow removed from around the bags. For best results, remove bagged high moisture corn during cooler months. Punctures, rips, or tears in the summer can cause rapid and expansive spoilage.

Preservation

High moisture corn offers some unique preservation challenges compared to corn silagebecause it ferments more slowly and less extensively while containing high levels of starch, which promotes aerobic deterioration. Any aid to hasten fermentation, use up available oxygen, and inhibit yeast growth (once exposed to oxygen) is beneficial in the ensiling process. Several options are currently available to producers. Here's a quick rundown of each:

Standard bacterial inoculants

High moisture corn inoculants have been available for many years. These primarily produce lactic acid during the fermentation process (homofermentative) and increase the speed of fermentation, while reducing dry matter loss. They MAY also increase animal performance.

Choose an inoculant that has been specifically developed for ensiling high moisture corn.

Specific strains of bacteria may not grow well on all crops and across a wide range of moisture contents. Thus, a corn silage inoculant may or may not work well under the drier conditions of high moisture corn. Most standard high moisture corn inoculants were developed to improve fermentation. For this reason, aerobic stability during and after feed-out may not be significantly improved. In fact, some standard lactic acid producing bacterial inoculants may actually improve fermentation but decrease aerobic stability (heating at feedout). With all inoculants, it is important to follow the manufacturer's application rates. Typical rates are between 100,000 and 500,000 colony forming units (cfu) per gram of high moisture corn. *Lactobacillus buchneri* is a unique bacterial inoculant that has been developed to improve aerobic stability of silages and high moisture corn by reducing the growth of yeasts. The net result is grains inoculated with *L. buchneri* are more resistant to heating when exposed to air as compared to untreated silages. *L. buchneri* was originally isolated from naturally occurring aerobically stable silages. It is a heterofermentative bacteria that produces both lactic and acetic acid during fermentation. Silages treated with an effective dose (600,000 CFU/gram of wet corn) of *L. buchneri* have higher concentrations of acetic acid and lower levels of lactic acid than untreated silages.

The beneficial impact of *L. buchneri* appears to be related to the production of acetic acid.

Although the precise mechanism has not yet been determined, it is likely that aerobic stability is improved because acetic acid inhibits growth of specific species of yeast that are responsible for heating upon exposure to oxygen. As a result, the temperature of fermented feed inoculated with *L. buchneri* does not readily rise upon exposure to air and tends to remain similar to ambient temperature for several days, even in warm weather. Using *L. buchneri* often results in a slightly higher dry matter loss during fermentation compared to standard homofermentative bacterial inoculants.

L. buchneri is a well-researched, highly effective inoculant to use for high moisture corn preservation in all storage units. Use of L. buchneri improves aerobic stability and this is important if high moisture corn removal rates need to be reduced because of mycotoxins or excessively degradable starch.

Propionic acid

Preserving high moisture corn with propionic acid or propionic acid mixtures (propionic, acetic, benzoic) has been a proven effective practice for many years. However, it is more costly than simply using a standard inoculant and requires specialized equipment to apply.

There are several situations where the use of propionic acid to reduce pH and preserve corn makes good sense. In years past, some producers have successfully used concrete or wood floors/bins to store high moisture corn. In this case, it's a must that corn be treated with propionic acid. Applying propionic acid at the proper rate reduces the pH of preserved corn to about 4.0 and inhibits the growth of harmful microorganisms.

(EZ Acres continued from page 3)

The McMahons spoke of the pivotal role Cornell has played in their farm business. "Working with Cornell really pointed us in the right direction," Edie stated. "Since that time, forward progress has been steady. When we hit a bump in the road we have the tools to find a solution." Mike added "In any system, whether a suburb or a factory complex, taking a hard look at the nutrient cycle could bring cleaner, healthier water and soil for all of us. The biggest hurdle to overcome is people's fear of change."

For EZ Acres Farm, that willingness brought them an economically and environmentally sustainable livelihood with a bright future. *

The cost of treatment is usually comparable to that of on-farm drying.

The proper application rate depends on two factors: 1) the moisture content of the grain, and 2) the intended length of storage (Table 2). Rates are based on pounds of actual acid. It's most economical to treat corn with acid when kernel moisture is near 30 percent. It typically takes 10 to 20 lbs. of actual acid to fully preserve a ton of high moisture corn.

Another situation where acid may prove beneficial is when an upright silo is being filled but not fed from for an extended period of time. In this case, producers often only apply acid to corn that will fill the last 5 to 10 feet at the top of the silo. It is at the top where spoilage is most likely to occur as a result of oxygen infiltrating the grain. Again, determine rates based on

Table 2. Recommended application rates of propionic acid to preserve his moisture corn

Corn Moisture %	Lbs. Propionic acid to apply per 100 lbs wet corn ¹			
	Months corn to be stored			
	6	9	12	
20	3.3-5.0	4.0-6.0	5.0-7.5	
25	5.0-6.5	6.0-8.5	7.5-10.0	
30	6.5-8.5	8.5-11.0	10.0-12.5	
35-40	8.5-10.5	11.0-14.0	12.5-15.0	

¹ Use lower rate for well-mixed corn and higher rate if acid and grain cannot be well-mixed

length of storage and moisture.

Feedout

Be careful to plan for variable removal rate from the silo. A removal rate of 3 to 4 inches per day is typically required to prevent heating during feeding in warmer weather. However, if the high moisture corn contains mycotoxins or is wet with rapidly degradable starch, which may induce acidosis, the removal rate may need to be reduced to augment the addition of clean dry corn to the diet. Treating the bottom third to half the silo of high moisture corn with *L. buchneri* or propionic acid (12-15 lb/ton) may be desirable to insure flexible removal rates and maintain quality during warm weather feeding.

(Cover Crops continued from page 7)

Planting date & seeding rate recommendations for
fall-established cover crops

	Seeding Rate (lbs/ac)	Planting Date
Wheat & Triticale	75# drilled	mid to late September
Cereal rye	60# drilled	Sept. to
	120# b'cast	mid-October

Source:https://extension.psu.edu/cover-crop-species-to-plant-mid-september

Cornell University Cooperative Extension SCNY DAIRY & FIELD CROPS TEAM

BROOME - CHEMUNG - CORTLAND - ONONDAGA - TIOGA - TOMPKINS

60 Central Avenue • Cortland • 13045 • 607.391.2660 • http://scnydfc.cce.cornell.edu

NON PROFIT **U.S. POSTAGE PAID** PERMIT NO. 1 CORTLAND, NY 13045

Change Service Requested

mortality. Due to recent

6:30 pm milk punch

social hour

Mortality Disposal: Looking for Solution	s Roundtable Events	9 am—noon
CCE Oneida County, 121 Second Street, Or	riskany	
Managing animal tissue is a significant challenge and resp	onsibility in livestock production. Routine and	emergency losses of poultry and
livestock are significant environmental, biosecurity, and w	aste management concerns worldwide. Livesto	ock mortality due to barn fires, roof
collapses, excess heat/drought, ventilation system failures,	and floods impacts many livestock operations	. Many animals also need to be
chemically euthanized due to illness and injury and to avoid	id suffering. Rendering has been an option for	much of this mortality. Due to rece
changes, chemically euthanized animals will no longer	be accepted in rendering and there are limi	ted alternatives.
Farm Bureau Annual Meeting	Dinner & Business Meeting	6:30 pm milk punc
Rileys Café Marathon, 8 E Main Street	For questions contact Jeff Perry 607-220	0-6139 or jap255@cornell.edu

CALENDAR OF EVENTS

Oct 16-18 Cornell Nutrition Conference, Doubletree Hotel Syracuse, East Syracuse More information online at https://ansci.cals.cornell.edu/news-events/cornell-nutrition-conference/

Nov 3	8th Annual Cortland County Ag Trivia Contest CNY Farm Supply, 3865 Route 11, Cortland For more information or to sign up your team contact Kaye Liddington-Hall at 607.756.4502		6 pm
Oct 19	CCE Cortland Annual Meeting- SAVE THE DATE	Location TBA	6 pm

- Oct 25 & **Calving and Neonatal Calf Care Hands-On Training** various locations Nov 8 See Page 2 for more information
- Nov 27-29 Northeast Regional Agribusiness and CCA Conference, Double Tree Hotel, E. Syracuse Up to 15 CCA Credits/DEC Credits. This year's Conference merges, The Cornell Field Crop Dealer Meeting, Cornell Vegetable School, Northeast Region Certified Crop Adviser Training and NYSABA Meetings.
- Dec 12 & 13 2nd Annual Empire State Barley & Malt Summit, Holiday Inn, 441 Electronics Pkwy, Liverpool Topics: Research-based technical updates, Best practices for success, Supply-chain networking. Event Kicks off with a tasting, featuring several breweries pouring samples of craft beer that highlight the use of NYS grown hops and barley.
- **Dec 14** Succession Planning Kickoff Seminar for Farm Businesses, Double Tree Hotel, E. Syracuse Speakers to include Steve Walker, Esq, Erica Leubner, MSW and John Lehr of Farm Credit East. This year's conference will focus on addressing the challenges surrounding succession planning for farms, including tax, legal and estate implications, family communication and financial issues. A local 3-part workshop series will follow this winter.

Sept 21

Oct 9