

# FARM REPORT



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## FROM THE PRESIDENT'S DESK: HEAT ON THE HORIZON

Just as spring is on the horizon, we need to think ahead about summer heat. As temperatures creep up through April and May, we'll soon be more concerned with fans than frost and snow. So, each spring I feel the need to emphasize the basic importance of effective cow cooling.

As always, now is the time to make certain that all is in order before the first wave of heat stress happens. Research consistently supports the profitability of effectively cooling cows, even in northern regions of the U.S. Although you rarely see a cow barn in the northern US with no cooling capacity, it's still far too common for farmers to underestimate the combination of temperature and humidity that we routinely experience in regions like New York state.

Among the many negative consequences of heat stress in dairy cattle, the most significant is an increase in core body temperature that leads to prolonged standing in an effort to cool off. High-producing dairy cows can become heat stressed at a temperature-humidity index (THI) of only 68. At this THI we humans still feel comfortable, but the cow does not. Their greater sensitivity to heat stress is due in large part to metabolic heat output associated with higher milk production. Wisconsin researchers observed that, as THI increased from 56 to only 74, lying time decreased by 3

hours per day while standing in the alley increased by 2 hours. A THI between 56 and 74 seems fairly small, but the severity of loss in resting is startling. Three hours less resting time translates into lost milk, greater lameness, and lower feed intake.

Ordinarily, the comfort of the resting surface, or competition for the resting space, determines whether a tired cow will lie down. But, during heat stress conditions, core body temperature appears to control whether the cow stands up or lies down. Cornell researchers found that cows stand up once their core body temperature reaches approximately 102.0°F, and typically they won't lie back down again until their body temperature falls to approximately 100.9°F. Researchers from Arizona and Missouri confirm that cows are highly unlikely to lie down when their body temperature is above about 102°F. So, if you want your cows to achieve their required resting time this summer, cooling is a must!

Don't forget chewing. There is a strong relationship between resting and ruminating. A comfortable cow will perform over 90% of her daily rumination while lying down. A cow ruminating while lying down is secreting more saliva and doing a better job of buffering

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# LEMMEE TELL YOU WHAT I REALLY THINK

## *Editorial comment*

• A couple of months ago a farm magazine headline noted the exit of large number of Wisconsin dairy farms. But a reading of the article revealed that while the number of dairies continued its long downtrend, dairy cow numbers in the state were trending up. And since milk per cow continues to increase, this leads to the question: Is the Wisconsin dairy industry contracting, or is it expanding? To those who rue the demise of the “family farm”, many who have never milked a cow, it’s contracting. What they fail (or refuse) to recognize is how hard it is to operate a small dairy farm, especially one without any hired labor. Those darned cows must be milked at least twice every day, including on Christmas day and when the farmer is sicker than a poisoned pup. Vacation? That’s what other folks do. Getting big enough to be able to afford hired labor and a regular break from the daily routine is one of the common reasons farmers expand herd size, and there’s also the efficiency of size. It’s also easier to “keep them down on the farm”—referring to the farmer’s children as they reach maturity and consider careers — when the farm is run as a business

and not just a “labor of love”.

• “Farming: The art of losing money while working 400 hours a month to feed people who think you’re trying to kill them.” That’s a depressing definition but folks involved in production agriculture can certainly understand the sentiment behind it. If it’s not people attempting to link glyphosate applications to cancer, it’s claims that the use of GMOs results in “Frankenfoods”. Meanwhile, Americans are living longer, healthier lives — at least those who don’t smoke, pickle their livers with alcohol or use illegal drugs. Fears of pesticide exposure and genetically modified crops are increasing the popularity of organic foods, including milk. While I don’t think that milk produced using Certified Organic requirements is any better than “regular” milk, I’m willing to council and otherwise work with these farmers. In fact, a couple of long-time friends either own or manage organic dairies. If they can be more profitable by doing so that’s fine with me, and I’m also OK with consumers who are willing to pay a higher price for organic milk. Better than nut juice!

— E.T.

# PREVENTING BIRD DAMAGE DURING CORN ESTABLISHMENT

Cornell University tested a biological seed treatment, Avipel Shield, in 41 replicated trials over three years and found that it significantly reduced feeding by birds, resulting in increased corn plant populations. (The product is registered in New York.) Farmers have long tried to prevent bird damage in corn fields, and 30 or so years ago a couple of seed treatments were on the market that seemed to work. I did some strip tests with them in a couple of fields and found increased corn population, but these products are no longer available. Back in those days some Vermont farmers used to pour a cup of turpentine into each seed hopper and claimed that it worked as a bird repellent. Not quite sure if this was legal, the clever fellows said that they used the turpentine to better stick the powdered planterbox treatment to the seed. (They also used diluted maple syrup as a “sticker” but this seemed a waste of a tasty product.)

The resulting increase in plant population didn’t affect yields in the Cornell University trials, but over the long haul I expect that higher, more uniform plant populations would increase corn yields. Some of the farmers involved in the trials were impressed enough that’ve decided to treat all their corn with Avipel Shield.

— E.T.

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## HEAT, Continued from Page 1

the rumen pH. Effective cow cooling will boost rumination as it enhances lying time. At Miner Institute we observed about 1 hour per day less rumination time for cows exposed to minimal heat stress abatement versus the recommended fans and sprinklers over the feed bunk and stalls. Resting is the cow’s most highly

valued behavior, and we must do an effective job of cow cooling to get her into the stall and lying down to avoid production and health problems associated with excessive standing time. As the cow’s core body temperature rises she stands in an effort to speed cooling – and she’s not likely to lie down again until her

temperature is lowered. The latest research confirms that the best way to get a heat-stressed cow to lie down is to reduce her body temperature. Even in northern climates, heat abatement pays!

— Rick Grant  
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# HAY CROP CONDITIONING REVISITED

This is probably a poor time to be discussing equipment purchases given continued low milk prices, but some farmers will be buying mowers this year, perhaps because their old one is beyond repair. When it's time to buy a new mower, what type should you buy?

For years I sent the Miner Institute field crop supervisor Jake Ashline to Empire Farm Days on a mission: Find a disk mower at least 15 feet wide with no conditioning unit. Each year Jake went, he searched, and he couldn't find one. But large, "no conditioner" disk mowers are now available, and Miner Institute owns one (see photo). These mowers should be less expensive per foot of width, and the lack of a conditioning unit makes it easier to do "full swath" windrow management. Tom Kilcer (Advanced Ag Systems) did research in Eastern NY comparing no conditioning to roll conditioning of alfalfa, with wide swaths used for both treatments. He found that when the alfalfa was mowed at 9:30 am, not only was the "unconditioned" alfalfa 3% points lower in moisture by 3 pm (43% vs. 40% DM) but it was 1.3% higher in 24-hour in vitro true digestibility. That's because roll conditioners cause some leaf loss, though not nearly as much as do impeller conditioners (which are a poor choice for alfalfa and other legumes). There's good reason why I've long referred to impeller conditioners as



Miner Institute's large-capacity disk mower with no conditioner unit.

"alfalfa leaflet removal tools", and this is based on research, not opinion. Tom even found considerable leaf loss when an impeller conditioner was used on winter triticale.

There are biological reasons why mowed alfalfa dries faster when allowed to dry without mechanical conditioning, but most farmers are just interested in results: As Dragnet's Joe Friday would say, "Just the facts, ma'am." I'm not sure about the no conditioning route when making dry hay because I don't know of any research on this practice. Lacking any data, it's prudent to take the conservative approach until we have reliable results.

One approach farmers with roll conditioners could take is to widen the

roll clearance until they're doing little or no conditioning. Do a simple trial on your farm: Mow part of an alfalfa or alfalfa-grass field with your normal conditioner setting, then widen the roll clearance and continue mowing. When you start chopping, take representative samples of both treatments, send them to a forage testing lab and check the results for differences. If the field has considerable variability in stand composition make sure that the sampled areas are as similar as possible. Unconditioned alfalfa will almost certainly yield slightly higher because of better leaf retention; the difference might not be visible but just for the heck of it check under the windrows of both treatments.

— Ev Thomas  
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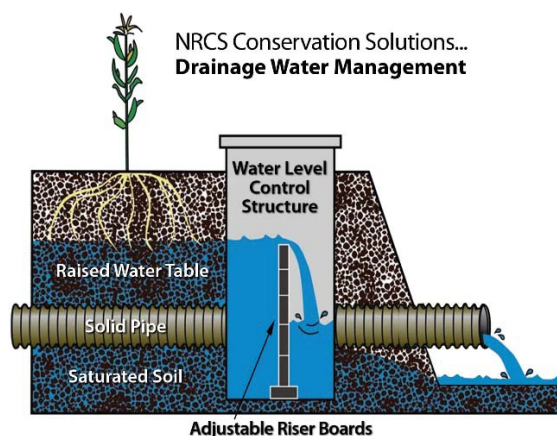
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# DRAINAGE WATER MANAGEMENT RESEARCH

Drainage water management (DWM) is a national conservation practice (Practice Code 554) that allows for the management of the height of the water table in relatively level fields equipped with tile drainage systems. To achieve this, a water control structure is installed on the tile outlet of a field. The control structure allows for riser boards to be added to the desired height, typically about 1 foot below the soil surface. Once the boards are installed, the water table will be drained to the level of the boards, rather than the depth of the tiles (see figure). The water table is typically raised following the completion of field activities in the fall and lowered in spring to allow the field to drain at full capacity prior to field preparation for the growing season. By raising the level of the water table in the non-growing season and reducing the drainage capacity, the total volume of outflow from the tile drainage system can be reduced during the period of time when there is little benefit to having a well-drained field.

Previous research at Miner Institute has demonstrated that the majority of runoff, N, P, and sediment losses occur during the nongrowing season. Therefore, it's critical to identify best management practices that will target this period. Not only does a majority of runoff occur during this period, but dairy farms that are constrained by the limits of manure storage must apply manure in the fall. This increases the risk of nutrient loss due to the long gap before plants will have an opportunity to utilize those nutrients and the high volume of runoff that occurs in the interim.

A review of 20 DWM research trials by Skaggs et al., (2012) found that depending on the site and the year, the practice reduced annual



drainage volumes by 18 to 85% and nitrogen (N) exports by 18 to 79%. As the majority of N loss occurs through tiles in tile-drained fields, these data illustrate not only the environmental benefits of DWM, but also the economic incentive of increased retention of N in the soil for crop uptake. While the benefits of DWM on N retention are now well-established, there has been limited research on the impact of DWM on phosphorus (P) losses.

With funding from the USDA-NRCS to implement an edge-of-field research trial, DWM was chosen as the treatment practice due to its potential to address two key factors for nutrient management in northeast dairy systems – targeting the nongrowing season and addressing tile drainage as a nutrient loss pathway. We are currently in the middle of the fourth year of this project and will continue through the fall of 2020. The first two years of the project (2016 & 2017) established the baseline relationship between the two fields, and we are now halfway through the three-year treatment period in which one field is managed with DWM in the nongrowing season and the other remains freely drained year-round.

During the baseline period, 50-78% of total runoff (surface + tile) from the fields occurred through the tile drains, with 77% of those tile flows occurring during the nongrowing season. As expected, the majority (91%) of all N losses occurred through tile drainage. However, greater than 90% of P and sediment losses were lost in surface runoff. Overall, losses of P and N from these fields have been relatively low regardless of DWM. Phosphorus exports have been consistently low, with an average of 0.7% of applied P lost in runoff annually (0.3 lb./acre/year). The solubility and mobility of N makes it a much more difficult nutrient to retain in the field and this is reflected in the higher rate of loss, with an annual average of 12.7% of applied N lost in runoff (19.1 lb./acre/year).

Although it's still a bit early to draw strong conclusions about the effects of DWM on runoff and nutrient loss, preliminary analysis of the first year of treatment data indicates that DWM appears to be producing the intended effect of reducing tile flow in the DWM field, with a similar magnitude of reductions in both N and P loads. Runoff patterns in 2018 were atypical, with very limited occurrences of surface runoff in either field which may have prevented us from detecting a greater impact of DWM. We are eagerly gathering more data that will improve our understanding of how this practice impacts water budgets, nutrient efficiency, and crop production in our region.

— Laura Klaiber  
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# BIRTH AND DEATH CERTIFICATES FOR CALVES

We are living in a data-driven world. No matter where you look we are constantly bombarded with different statistics and random information, and dairy farms are no exception. However, is the data being collected meaningful and in a form that can be used to improve outcomes on the farm?

An area to implement targeted data collection could be within the preweaning period. Heifers are at a high risk of death with over 6% of heifers dying within 48 hours of birth and another 6% dying in the preweaning period. While farms often do a good job of documenting when an animal is born or dies, specific details or classification about either of those events are not often recorded. As a result, trends may often be missed and opportunities lost to improve the care and well-being of those animals.

Would you be able to summarize calf birth and death information on your farm to be able to detect a trend that 30% of calves that died within the last year died around 3 days of age from apparent septicemia? If you can't identify this trend, then how would you be able to improve the management focused around the risk factors for septicemia?

Focused and consistent collection of data related to heifer mortality was discussed in a recent article published in the Journal of Dairy Science (102:4704-4712). The authors proposed the use of birth and death certificates as a way to collect data so that any trends in mortality within a farm could be traced back to the management of that calf from the time of birth and make connections between calves.

Birth certificates for calves can be used to identify information linked to predisposing factors for preweaning mortality. The authors gave a sample birth certificate and the type of information they recommended to collect for each calf: calf ID, birth date and time, breed, sex, dam and sire ID, dam lactation, calving area, dystocia score, number of calves, alive at birth (y/n), birth weight, navel treatment (y/n), environmental temperature, date and time removed from pen, colostrum fed (y/n, source, quality, heat treatment, volume, feeding method), passive transfer status, vaccinations, and if calf was alive at birth but died within 24 hours.

In addition, the authors discussed the value of death certificates for calves to more clearly identify the main

causes of death including those related to congenital defects, calving ease, failure to adapt to the extra uterine life, septicemia, diarrhea, respiratory, diarrhea and respiratory, other digestive problem, joint or navel, lameness/injury, accident, other known reason, or unknown reason. This information can then be used to identify the main reasons why calves are dying and when this is occurring. As an example, these classifications would allow farms to identify different causes of death within the first 48 hours of life compared to our normal classification of anything that dies within 48 hours as a "still birth". However, these classifications would allow for the differentiation between calving problems, congenital effects, or stillbirth (either eutocia or dystocia i.e. difference in calving difficulty), which all have different actionable items in terms of management between them and steps that can be taken to address the underlying cause of the issue.

Ultimately this information can help improve management of calves to help minimize welfare issues the number of heifers that die in the preweaning period.

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# FINDING MY WAY BACK - IN MEMORIAM

I'd been sitting by the door since my mom told me I could be excused from the table. Perched on a rickety old kitchen chair, feet swinging a good foot above the floor, I pulled on my tiny, calf-height yellow boots over my pink Oshkosh overalls. At last, I heard his heavy footfall approaching the mudroom. His work-roughened hands tousled my curls as he chuckled at the enthusiasm only an animal-crazy four-year-old could possess. "Well, now!" he'd say, as he pulled on his boots and well-worn Sire Power cap. (This was 1990, and we're from near Tunkhannock, PA, where the Northeast office of Select Sire Power is based.). I wanted to wear a hat, too. "Can I have one of those?" I asked. "Let's see what we got up here on the shelf," he replied. I don't remember exactly what hat he managed to dig up for me, but it didn't make any difference. At last, he was ready to go, and I bolted out of the door ahead of him, eagerly shrieking to summon Stormy and Sparky, the farm dogs napping behind the shrubs that bordered the side of the house. To him, it was just another day of 4 PM milking; to the blur in the pink overalls streaking toward the calf pen, it was better than any trip to Disney.

In my mind my Uncle Harold was the embodiment of the Pennsylvania dairy farmer. Perpetually clad in work pants, heavy boots and plaid, collared shirts, the 51-year veteran of the trade was fascinating to me. Tough, yet genuine and kind with a heart devoted to his family and his faith, I thought all farmers looked, sounded and acted like him. He was my example of what a real human being should be. In my mind's eye I can still picture those two small, red stanchion barns as though I'd been in them yesterday. I can still hear his voice, and his peculiar way of speaking that is unique to Northeastern PA. I never tired of following him around the barn, Sparky at my heels,

asking him question after question about what he was doing and why. My favorite thing was to wander the aisles, picking up feed and offering it to the hesitant cows, who weren't used to being paid attention to, in the hopes that they'd eat out of my hand. I attempted to pat their noses in that clumsily affectionate way that children have. None of the cows ever went thirsty, as I would watch their bowls like a hawk and joyfully push the button that refilled them with water. Even though the scraper was twice my height, he'd laugh as I tried like crazy to scrape manure into the channel as I'd seen him do. I credit all of this to the reason my immune system is near impenetrable, especially since I'm sure I never washed my hands immediately after playing with the calves. As I got older it was understood that at family gatherings I'd be the one going out at 4 o'clock to help with chores. That farm is rented by someone else now; the barns are still full, and round bales dot the landscape around them. There's still a bunch of cows milling around in the mud by the pasture gate. Someone else has kept that tradition alive.

Uncle Harold passed away on March 12, 2019. In his obituary was printed "A Farmer's Creed", of which two stanzas accurately capture my feelings on the agriculture world, and why I found my way back:

*"I believe a person's greatest possession is their dignity, and that no calling bestows this more abundantly than farming."*

*"I believe farming provides education for life and that no other occupation teaches so much about birth, growth and maturity in such a variety of ways."*

I was never far from a barn throughout my formative years; whether it was on

the family dairies, or in a horse barn, this atmosphere provided a level of peace, comfort and self-assuredness that nowhere else could. Life took the other kids in the family and me away from the farms; we all had other aspirations and goals that we were encouraged to chase. Something was always missing for me, though. The gentle tug in the back of your mind is not to be ignored. I've learned that that tug is life taking you gently by the shoulders and guiding you back onto the path you're supposed to take. Nowhere else but on a farm would I have learned so thoroughly about life, ethics, morals, empathy, compassion, and how to treat others. Nowhere else would I have learned to be so comfortable with change, confronting the unexpected, rising to a challenge, and confidence in my ability. Life on a farm teaches you that everything you do, no matter how small or seemingly mundane, contributes to a much grander scale, and you learn to appreciate the satisfaction of a life born of a good day's work. You don't realize how much these qualities contribute to your development until you're not immersed in them anymore. None of the other careers I've had have been able to provide those same feelings, so there was only one thing to do; circle back to the life I always knew I loved. For the first time in well over a decade, I now know where I'm supposed to be, and what I'm supposed to do. And for that, I have my Uncle Harold to thank.

The agriculture world needs people like us to keep the tradition and passion alive. For anyone else who feels the pull, don't be afraid to let it lead you. You might be surprised at where you end up. Although, I can't say as though I am.

— Cari Reynolds  
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# WHAT'S HAPPENING ON THE FARM

Spring has taken its time arriving in the North Country this year. The spring thaw has flooded our bunks and left ponds in many of our fields. Wet feed has been an issue in a few instances, and we've had some bouts of nutritional upset in our herd recently. Whether or not this was an issue that contributed to an influx of DAs currently is up for debate, but it has certainly caused a good amount of indigestion in our milking cows.

As we prepare for the warmer weather, we are also unfortunately anticipating flies. Hoping to protect the farm from these pesky intruders, we have added Clarifly back into our calf milk replacer and cow TMR. We will again be using a pest control company to spray the environment with a non-toxic, all-natural essential oil mix that did a fairly good job of keeping the fly population down last summer.

The logging company has been very busy taking down trees near our dry barn for the past few weeks, and with each load of pine and cedar logs that goes by, we get a little bit closer to clearing the land for our new manure pit and dry barn addition. This 230-ft expansion will be tailored to the needs of our research herd and be designed to streamline our studies. Our barn planning team has a big job with lots of decisions to make,



and we are all looking forward to seeing what they come up with. In addition to the pit and the barn expansion, another construction project will also be in the works this summer- another feed bunk. It will be 35ft x 200ft and have a blacktop floor with markers on the top of the walls. It will serve as another place for us to put our corn silage as we struggled with finding enough room for it all last harvest season, and will stay in our CAFO plan.

With the onset of more sunny, warm days, we are reminded of the arrival of our summer students in just a few short weeks. This year, we will have three young ladies joining us: two of them from different parts of New York, and one from Ontario, Canada. After



reading through their applications and interviewing them over the phone, we are very excited to meet them in person and have them learn alongside us and the rest of the staff at the Miner Institute!

In more personal news, I have recently accepted my seat at the Midwestern University College of Veterinary Medicine in Glendale, Arizona as a member of the Class of 2023. I will be tracking mixed animal with a large/production animal focus, and plan to practice with a heavy emphasis on dairy cattle after I leave school. Although I will be sad to leave the Miner Institute near the end of the summer, I am thankful for all that I have learned here, for the opportunity to work with such a wonderful herd of animals, and for the copious amounts of support I've received here. I am truly excited to pursue my dream of becoming a veterinarian!

— Victoria Vendetta  
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## BMR CORN THOUGHTS

BMR is enough different from “normal” corn silage that many farmers hesitate to make the necessary leap of faith and plant it. The recommendation that BMR be planted and stored separately is another reason for hesitation. But there's a way get into BMR corn silage on a modest scale if you can store it separately — such as in a silage bag. There's solid research showing that

feeding BMR corn silage to transition cows (cows 2 to 3 weeks prior to calving) and then 3 weeks or so after calving can be very profitable. In one Cornell University trial, cows fed BMR corn for 2 weeks before and 3 weeks after calving wound up making over 7 lbs. more milk than cows fed conventional corn silage. BMR had a similar impact on milk production

as rBST — it drove the cows to higher peak milk production, and even when the ration was changed to conventional corn silage the impact of BMR persisted long into the lactation. A similar system is being used in the Miner Institute herd.

— E.T.

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## *Closing Comment*

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