FARM REPORT

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FROM THE PRESIDENT'S DESK: PACK, PACK, & PACK SOME MORE

Recently we had a problem with our 1st cut grass silage that we feed to heifers and dry cows. It was heating day after day even though the feedout rate was above the typical recommendation of ≥6" per day. The temperature measured 6" into the face after defacing was >95°F. This was well above our ambient air temperature as well as the temperature range we historically find for our silage (~65 to 75°F). Our feeder was removing a lot more spoilage from the top of the bunker silo than normal which let our feeder skip going to the gym for a workout but made our crops crew concerned to see so much waste given their efforts to put up the forage earlier this summer.

Our nutritionist did 9 silage packing density measurements across the silage face from top to bottom. We were way below the minimum recommendation of 14 to 15 lb of dry matter (DM) per cubic foot (lb DM/ft^3) with an overall average of 10 lb DM/ft^3. The densities averaged 5, 11, and 13 lb DM/ft^3 for the top, middle, and bottom locations, respectively. As expected, increasing the silage height or the amount silage above the point of measure increased density. The DM of the samples averaged 33% so the forage should have packed well; it wasn't too dry. These poor densities explained why we were seeing the chronic heating and excessive spoilage on the top of the bunker. We estimate that we lost 15 to 20% of our DM from the poor packing based on the classic silage work from Ruppel in the 1990s. This is a direct economic loss for our herd. We likely experienced indirect losses too from having a silage with a lower nutritive value, reduced palatability affecting intake, and greater risk of poorer animal performance and health. Also, with lower densities, more storage space is needed, something that is not readily available.

Silage packing density is the most important factor affecting silage quality once the forage is in the bunker. With proper packing, oxygen is depleted more quickly thereby stopping plant respiration and reducing growth of aerobic microorganisms that cause spoilage. Yeasts and molds, as well as other aerobic microorganisms, convert sugars and organic acids to carbon dioxide, water and heat resulting in DM loss. Density, along with the silage DM determines the porosity which sets the rate at which oxygen (air) moves into the silage leading to spoilage during both the storage and feedout phases. Porosity is difficult to measure on-farm. However, our feeder noted that with the poor packing, the top of the silage felt "spongy" or soft when he walked on it to remove plastic and tires at feedout.

Our team met to figure out what went wrong with the bunker filling and reviewed ways to increase silage packing density for our next forage cuttings. Here are some of the highlights:

- Proper training is critical for any new team

See **PACKING**, Page 9

LATE SUMMER CROP TOPICS

- Over the past decade or so there's been a huge increase in the acreage of soybeans both in NY state and in Northern NY. I've seen some fine-looking stands of soybeans around here, also some that were planted quite late and will need some unusually good weather (including a late frost) to reach proper harvest maturity. What about the soybeans that won't make it? As long as the crop hasn't been killed by frost (with the resulting leaf loss) it can be chopped for silage. What you'll probably get will be around 30% DM with forage quality somewhat lower than timely-harvested alfalfa. Three tons of DM would be an excellent yield, but in many cases expect less. I would not ensile this in the same silo with alfalfa or alfalfa-grass. Palatability is only fair, so it's probably better fed at a modest rate of inclusion in a TMR. On the plus side, many years ago we fed some soybean baleage to Miner Institute heifers and they ate it quite willingly.

- "Silk to silage in seven weeks" is a useful rule-of-thumb though of course it will be influenced by the weather conditions following silking. Note when each of your fields silks, which should be a rough guide for when it's time to change heads and grease up the chopper. There's not a lot of difference among hybrids as to how long it takes each to progress from silking to silage harvest maturity (mid-30s % DM).

- By now you should have at least a fair idea of your inventory of "milk cow quality" forage crops. As stated in previous newsletters, I'm not a big fan of fall-harvested alfalfa. I'm OK with alfalfa harvested in the first half of September, less so after that, especially not after the first cold weather of the fall arrives. If you really need the forage then wait at least 6 weeks since the previous harvest, use a silage inoculant and leave a 4" or higher stubble. Even so, don't be surprised if your first cut yield next spring is lower than if you had left the fall growth. As Mother Nature says: You can pay me now, or you can pay me later.

- Got a crops-related question? You can contact me via email, or if you need a quick answer call or text me at 518-570-7408. Best times to call are 7-8 AM, noon, and early evenings.

— Ev Thomas
ethomas@oakpointny.com

CORN SILAGE HARVEST

Several facts to keep in mind as we approach the harvest of corn for silage:

1. Corn silage is composed of two crops: A high-quality grain and a modest-quality tropical grass.
2. Corn silage feed value is influenced by the relative amounts of these crops. More grain = higher fed value.
3. Hot weather and excess soil moisture depress NDF digestibility, but because corn grain has only about 10% NDF it's much less affected by these factors than is the rest of the plant.

While it's been a hot summer throughout farm country, regions that also had excess rainfall may have corn plants with somewhat lower NDF digestibility than normal. This is a bad year to have a poorly-eared corn crop! So what to do? Even if the crop appears to have a normal grain-to-stover ratio, I'd suggest getting an NIR forage analysis as soon as you start chopping. This isn't for ration-balancing but mostly to check NDF-D. Do whatever it takes to get a representative sample. If the results are ugly it may be profitable to increase your chop height by 6" to 12". Starch % will increase by a point or two, NDF-D will increase by 2-4%, while yield (35% DM basis) will decrease by about 300 pounds per inch of increased chop height. Therefore, high chopping is simply a trade-off of yield for quality. Note that the impact on forage quality assumes a "normal" chop height of 6". A higher normal chop height will reduce the impact of high chopping. Do you know what your normal chop height is? Have you measured it? Finally, do not high chop BMR corn because BMR stalks are highly digestible.

— E.T.

ARE FARM KIDS HEALTHIER?

As a kid, and even now, I thankfully don't get sick very often. I've always joked that because I have grown up on a farm and have had manure in my mouth on multiple occasions, it takes a lot for me to get sick. Just like our cows, the environment in which children grow up in has effects on their overall health and well-being. While I know that there are other factors that contribute to a strong immune system, from a very young age I was exposed to a variety of germs that are naturally present on farms, and I think this has played a role in strengthening my immune system. It turns out that researchers think so too.

Various studies have shown that children raised on farms have lower risk of developing certain health conditions and allergies, compared to those who were raised in a nonfarm setting. A European study published in the *Journal of Allergy and Clinical Immunology* found that children living on a farm have significantly reduced risk of asthma, hay fever, atopic dermatitis (also known as eczema) and atopic sensitization ($P < 0.001$) compared to children who had only visited a farm or had no farm exposure.

A more recent study published in the same journal surveyed children 5 to 17 years old in rural Wisconsin. Of the completed surveys, 268 children lived on a farm from birth to at least 5 years old, and 247 children lived in a similar rural area but never lived on a farm. The researchers used parental questions through the survey as well as electronic medical records to determine exposure to a farm environment and any illnesses. In this study, the frequency of asthma was similar for both groups based on interview and medical record results ($P \leq 0.58$). On the other hand, medical records showed that only 5.2% of the farm kids had allergic rhinitis, also known as hay fever, compared to 12.4% of the non-farm kids ($P = 0.02$). Chronic skin rashes such as eczema were less common in children that grew up on farms compared to those with no farm exposure based on results from the interviews (6.8% vs 19.5%, respectively; $P < 0.001$). Medical records of skin rashes were similar in both groups ($P = 0.92$). Children that grew up on a farm also had significantly less instances of early life severe respiratory illness compared to non-farm children based on interviews (15.7% vs 31.4%, respectively; $P = 0.006$) and medical record results (6.8% vs 17.6%, respectively; $P < 0.001$). When researchers did multivariable analyses that controlled for age, sex, family size, household smoking, family history, breastfeeding, and daycare, early exposure to farm environment continued to be a significant protective factor for eczema, hay fever, and early life severe respiratory illnesses.

This protective effect of being exposed to a farm environment has been summarized as the "farm effect". The farm effect is a phenomenon where exposure to a farming environment in early life protects children against asthma, hay fever, and atopic dermatitis. Other studies have explored the importance of the timing and duration of exposure to farm environments, and how that can play a crucial role in the protective factor of the farm effect. The Wisconsin Infant Study Cohort studied pregnant mothers and their babies, from farm and rural nonfarm areas, from prenatal through 24 months of age, to determine how farm exposure influences allergic diseases, specifically atopic dermatitis. Researchers found that farm kids overall had reduced incidences of atopic dermatitis ($P = 0.03$). Within the farm group, the researchers grouped the mothers and children into three groups based on frequency of exposure to farms. The children from mothers who had regular contact with multiple farm animals' species and indoor and outdoor facilities had the lowest incidences of atopic dermatitis. The children that had limited exposure to farms, both prenatal and postnatal, had similar results to children that had no exposure to farms. Children that had exposure to only one farm species, for example cows and cattle, did have reduced risk of atopic dermatitis; however, it was not less than the children who had exposure to multiple farm species. Another study called the Protection against Allergy-Study in Rural Environments, examined the relationship of farm exposure and duration of farm exposure on the development of hay fever. These researchers found that farm children had only half the risk of developing hay fever compared to those with no exposure. This study also looked at the relationship between farm milk consumption and development of hay fever. The study showed that continuous consumption of cow's milk, through 10.5 years of age, had protective effects on the development of hay fever ($P = 0.004$), likely because the repeated exposure to unprocessed cow's milk may increase the richness of the gut microbiome.

So, maybe a little dirt doesn't hurt anybody. Exposing children at an early age to a variety of microbiomes and animals, as you have on a farm, will serve to benefit their immunity in the long run.

— Emily Bourdeau
ebourdeau@whminer.com

FEEDING LOW LIGNIN ALFALFA TO DAIRY COWS

An article was recently published in the *Journal of Dairy Science* evaluating low lignin alfalfa in the diets of dairy cows. Low lignin alfalfa has been developed with the potential to improve animal performance. Alfalfa typically has higher crude protein content and lower neutral detergent fiber (NDF) relative to other crops but generally has higher lignin. Lignin is important from a structural standpoint in the plant but generally is negatively related to fiber degradation in the rumen. Varieties of lower lignin alfalfa have been developed through two methods; 1. Breeding techniques leading to the selection of varieties with greater leaf: stem ratio, and 2. Genetic engineering resulting in the downregulation in the enzyme responsible for lignin biosynthesis in the plant.

	Control	Mid Low Lignin	High Low Lignin
Diet, % of DM			
Corn silage	18.2	18.2	18.2
Conventional alfalfa hay	32.2	16.1	0
Low lignin alfalfa hay	0	16.1	32.2
Grain mixture	49.6	49.6	49.6
Chemical composition, % DM			
Crude protein	18.0	17.9	17.8
NDF	29.2	28.9	28.5
Lignin	3.31	3.19	3.07
Starch	25.8	25.9	26.1

There has been some *in vitro* work evaluating these varieties which noted improved NDF digestibility, while studies with beef cows have not resulted in improvements in gain (via improved energy from increased NDF degradation). Until this study (https://doi.org/10.3168/jds.2024-24966) there has been little work done in dairy cattle, which is important to demonstrate the benefit of a technology such as low lignin alfalfa.

A variety of each type of low lignin alfalfa was grown for this study and compared to a conventional alfalfa variety. Total inclusion of alfalfa was the same across all diets (32.2% of DM), however the inclusion level of low lignin alfalfa was 0, 16.2, or 32.2% DM (see table). With the inclusion of the low lignin alfalfa the NDF and lignin decreased slightly as the inclusion level increased.

In terms of performance, there were limited differences for the Jersey cows used in the study. There was no difference on intake (45.0 lb/20.4 kg), milk (68.3 lb/31 kg), fat (4.51%), or protein (3.43%). There tended to be a linear increase in energy-corrected milk feed efficiency, with cows fed the high rate of low lignin alfalfa diet having higher feed efficiency. The authors also evaluated gas production and noted a quadratic effect on methane production with cows fed the mid low lignin diet emitting the least methane but no differences in total tract digestibility were observed.

Some back-of-the-envelope math indicated that the cows on the different diets consumed 1.42, 1.39, and 1.34 NDF as a % of body weight respectively for the control, mid, and high low lignin diets. Typically, we would see cows become more limited at 1.40 NDF as a % of body weight. It's interesting that the cows fed the higher amount of low lignin alfalfa were less limited by NDF intake, and potentially could have consumed more. This could be related to the lower lignin and less cross linkages in that cell wall structure. However, this didn't result in a difference in intake. A limitation of this paper is that they did not report any NDF digestibility values of the alfalfa, and it would have been interesting to know the amount of undegradable NDF in the forages used to relate it to previous work we have done at Miner Institute in the last couple of years with varying levels of alfalfa in the diet. Although we didn't use low lignin alfalfa we had a wide range of uNDF intake because of the varying inclusion levels. These diets would be comparable to our 10 to 50% inclusion rate of alfalfa where we also didn't observe differences in intake or milk at that range of NDF. It would be interesting to follow up this study with a higher inclusion rate of low lignin alfalfa to see if intake or digestibility would be impacted when fed at higher levels of the diet. At least under these growing conditions there seems to be limited response of the cows to these diets. Further exploration with further digestibility analysis would be interesting to understand the dynamics of this forage in the rumen and why cows had limited response.

— Sarah Morrison
morrison@whminer.com

SOME THINGS DON'T STOP AT THE FENCE

If you were a fan of the 1990's TV show "Home Improvement", you likely remember Tim "The Tool Man" Taylor's garrulous and omnipresent neighbor, Wilson, on the other side of his backyard fence. There are various rumors as to why Wilson's face was never visible below his eyes until the final episode of the show, the most prominent being that Tim Allen wanted the character to pay homage to a childhood neighbor he could never fully see because he was too short to see over the fence. Despite the fence being in place, Wilson still managed to dispense a lot of wisdom and advice to the Taylor family. But sometimes the things exchanged at the fence aren't always a benefit.

The recent rise of highly pathogenic avian influenza in dairy herds serves as a reminder of how quickly and easily the spread of disease can occur, and why surveillance and smart biosecurity practices remain of critical importance. It's also more important than ever to make sure that the treatments we have for most diseases remain effective. A recent article appearing in the *Journal of the American Veterinary Medical Association's* "Currents in OneHealth" discusses the spread of antimicrobial resistance at varying wildlife and domestic animal interfaces. Spatial needs for urban areas are changing rapidly to accommodate growing populations, and coupled with deforestation and other clearing of areas for grazing land, usually means encroachment on wildlife habitats. This is often why the appearance of turkeys, coyotes, and bears in suburban neighborhoods becomes a six o'clock news feature. With increased opportunity for contact between wildlife and domestic animals comes an increased risk for transference of antimicrobial-resistant bacteria (AMR). Wild birds and mammals are two important reservoirs (carriers) of AMR, and with their ability to fly and roam freely, they act as vectors (living creatures capable of spreading infection). With these new disease reservoirs, it can allow for new diseases to effectively and quietly 'hide' within populations. Once new wildlife reservoirs develop, it becomes nearly impossible to eradicate diseases once they spread into ecosystems. Animal feces, shared food and water, and contamination of groundwater from industrial and wastewater runoff are highlighted as the three biggest routes of transmission, especially for enteric diseases such as *E. coli, Salmonella, and Campylobacter.* Companion animals (cats & dogs) that encounter wildlife or their excrement can become a reservoir, and thus pose a potential threat to their owners.

For livestock, fence-line contact with wildlife reservoirs and exposure to feces and shared feed between species creates an opportunity to spread disease. As an example, *Mycobacterium bovis* (bovine tuberculosis) is spread to cervids (white-tailed deer, bison, and elk) through shared grazing space with infected cattle herds and remains one of the diseases with the broadest host ranges of all known zoonotic pathogens, though as of December 2023, very few cases have been detected in US cattle herds. Animals that gain access to or share livestock areas that may be a silent hidden reservoir of disease (especially AMR bacteria) are a threat to human and animal health alike, and it is important to make sure that judicious use of antimicrobials is still a priority in all health sectors. It is difficult and sometimes impossible to keep wildlife (especially birds) and livestock from coexisting spatially. In barns, keeping waterers clean, shooing birds* away from feed as much as possible, and reporting any signs of illness or strange behavior in wild animals or livestock help with surveillance. Making barns and other animal spaces undesirable habitats for rodents and other critters by removing clutter, potential bedding and nesting spaces, and removing droppings when noticed can help reduce disease exposure and keep certain things on their respective side of the fence.

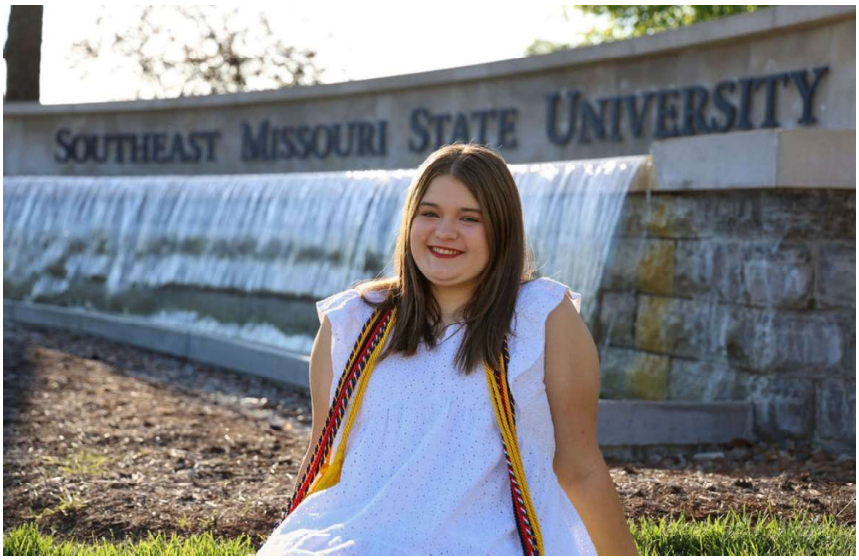
* Fun fact: Unless it's on your own property, scaring pigeons is punishable by law in Massachusetts with a fine of $20 or up to one month in jail.

— Cari Reynolds
reynolds@whminer.com

Is there something you'd like to know more about?

Email article suggestions to dutil@whminer.com

WELCOME HANNAH!
NEW RESEARCH INTERN



Hello All! My name is Hannah Jones, and I am thrilled to be joining the research team at H. Miner Institute as a yearlong intern. I had the incredible opportunity to experience Miner Institute firsthand as a Summer Experience in Agricultural Research intern in 2023. The invaluable learning experience I had here made returning for a longer internship an easy decision.

Growing up on a small hobby ranch in the "bootheel" region of Missouri, surrounded by my family and a handful of gaited mules, my passion for animal science began. I spent many early mornings and late nights with our foals, even raising one on a bottle from birth to weaning during a particularly cold winter. My upbringing taught me a love for animals and agriculture, but also an excitement to delve into all the field had to offer.

I recently graduated from Southeast Missouri State University with a Bachelor's degree in Animal Science & Biomedical Science, complemented by minors in Chemistry and Biology. The agribusiness focuses of my university's animal science program broadened my horizons beyond the core curriculum. I actively engaged in campus life through organizations like the Missouri Farm Bureau, Delta Tau Alpha Agricultural Honor Society, Student Government, and the Pre-Veterinary Science Club. Through my involvement in Farm Bureau, I developed a keen interest in agricultural issues, policies, and advocacy. Beyond my campus, I gained valuable hands-on experience working part-time at a companion animal veterinary clinic, where I observed surgeries, diagnostics, and patient care.

I am excited to apply my knowledge and enthusiasm to this internship and contribute to the important work being done at Miner Institute. I find that there is nothing relevant to agriculture that cannot capture my interest, so I am excited to soak up all that this experience has to offer. Nutrition and reproductive physiology are of particular interest to me, and I hope to broaden my knowledge of those in the context of herd management. Ultimately, I aspire to become a large animal veterinarian with a focus on medicine and nutrition, and this experience will undoubtedly be a significant step towards achieving that goal.

— Hannah Jones
hjones@whminer.com

NOTABLE QUOTES

- If you want your children to listen, try talking softly to someone else. – Ann Landers
- We learn from experience that men never learn anything from experience. – George Bernard Shaw
- Anyone can do any amount of work, providing it isn't the work he's supposed to be doing at that moment. – Robert Benchley
- Change is good. You go first. – Dilbert, in "Doonesbury"

WELFARE OF SURPLUS CALVES BEFORE TRANSPORT

Each year millions of calves are born on dairy farms that cannot serve as replacement milking animals. These "surplus calves" consist of dairy bulls or beef-dairy crosses with a small percentage being infertile or genetically sub-optimal heifer calves. These animals are transported from farms to markets at an early age and are mostly sold for meat.

Dairy bull calves are a low-value byproduct of dairy farming, so farmers make efforts to use sexed or beef semen to ensure the birth of more replacement heifers and higher market-value animals. When farms do sell dairy bull calves they're often raised to 475 to 500 pounds and marketed as "special-fed" or "milk-fed" veal. Sometimes if calves aren't sold to surplus calf production systems due to limited market availability, they're harvested after leaving dairy farms. These are known as "bob" veal. Beef-dairy cross calves are either marketed as veal or raised as beef and harvested around 2 years of age.

Regardless of where these calves end up, a successful and productive life starts at birth. Especially with the rise of beef-dairy crosses that are raised to adulthood and aim to qualify for Certified Angus Beef, it's essential that dairy farms set up surplus animals for optimal health and production.

The good news is that farmers do care for these calves. In June 2024, a study published by Cheng et al. from The Ohio State University (Journal of Dairy Science 107(6): 3885-3898) surveyed 315 dairy producers from Florida, Michigan, Ohio, Vermont, and Wisconsin about their perspectives on surplus calves. Below are some of the highlights:

- 95% of respondents believe it is their job to provide optimal care to male calves, 89% believe their male calves are receiving optimal care, and 57% consider male calves a valuable part of the dairy industry.

- 80% of respondents do not consider financial cost to be a barrier to providing optimal care and 79% do not consider workload to be a barrier.

- 94.5% of respondents feed equal volumes of colostrum to male and female calves, though a small percentage feed more colostrum to females. 7.3% of respondents feed colostrum to females faster than to males.

Colostrum quality and handling practices were not investigated for this study, but it would be interesting to see how these factors differ between males and females. Researchers also found that most small and medium farms (less than 500 lactating cows) market surplus calves between 3 and 7 days old while large farms tend to market calves under 3 days old, likely because of increased access to calf transportation. A calf's developing immune system, inability to thermoregulate, and the many transport-related stressors make younger calves more susceptible to disease during and in the weeks after transport.

Welfare concerns have led some countries to develop regulations for transporting pre-weaning calves: For example, Canada requires that calves be a minimum of 9 days old and have healed navels before they can be transported to auction. The U.S. only states that calves cannot be transported for more than 28 continuous hours; no age or health requirement is detailed.

The current system for marketing and transporting surplus calves has opportunities for improvement at the producer level. Below are a couple of considerations that come to mind:

Communication and collaboration: Cheng et al. observed that over 50% of farmers from small to medium-sized farms don't receive feedback from calf buyers; notably, 72.3% of Vermont respondents don't get feedback and 29.3% don't know where their calves go after leaving the farm. The need for collaboration goes both ways, though: Of the dairy farmers that do receive feedback from calf raisers, only 37.9% have used it to make changes to their male calf care practices.

Record keeping: If a concern about a calf arises, calf buyers should know if there was an issue at birth; for example, were there calving difficulties? How much did the calf drink and when? Did it have a particularly long transport?

Traceability: Along with record keeping, lack of traceability is concerning when considering the rise of diseases such as avian influenza. If a calf comes in with a contagious disease, it's vital to everyone in the production line to figure out where this disease was transmitted and stop further spread.

Fitness for transport: England et al. (2023) published a study from Ohio State which observed the condition of bob calves arriving at an Ohio abattoir from markets in New York, Pennsylvania, and Ohio (Animal Welfare vol. 32). Of the 420 calves they observed, 95.5% had at least one poor health characteristic. Notably, 68.6% were dehydrated, 25.7%

See **WELFARE**, Page 11

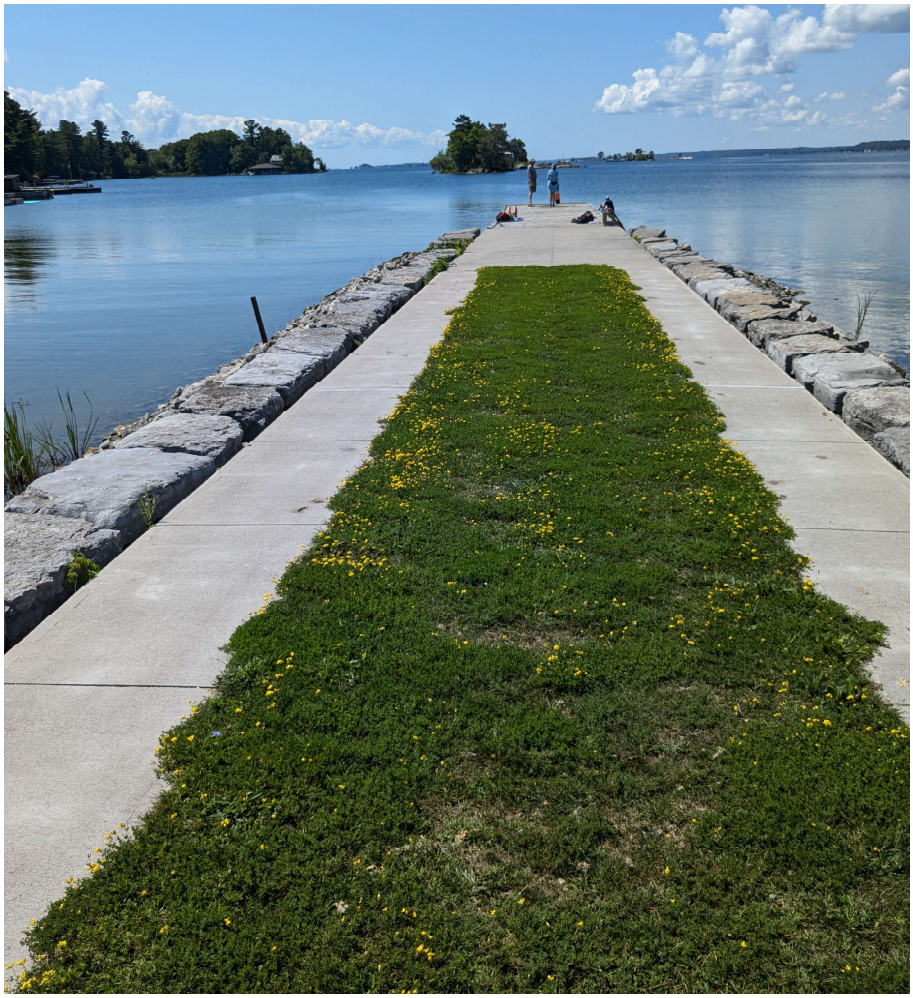
WEED CONTROL IN ALFALFA-GRASS STANDS

Farmers growing alfalfa-grass have had very limited (legal) options to control weeds both during and after establishment. Now there's an option that may be worth trying: *Prowl H2O 3.8L* is now labeled for weed control in alfalfa-grass, and will provide 1 or 2 months of residual control. Applications may be made in the fall after the last cutting, during winter dormancy, in the spring, or *between cuttings*. In-season applications should be made before the alfalfa has regrown to 6", and might cause some stunting and yellowing of the alfalfa. Weeds controlled by Prowl H2O include some broadleaf weeds as well as summer annual grasses including crabgrass and foxtails. *Sharpen* 2.5SC is also registered for alfalfa-grass as a dormant application, and should control a variety of broadleaf weeds. It must be applied 28 days prior to harvest.

This all sounds promising, but make sure the herbicide application is registered and legal where you farm, and of course **read the label**. Another consideration is what will grow after the weeds are controlled. Nature abhors a vacuum, and if there are obvious bare places after the weeds have been controlled you should consider filling them in with another forage. Not alfalfa in an alfalfa-grass field, but drilling in red clover is an option, especially if you plan on keeping the stand for another year or two.

— E.T.

BIRDSFOOT TREFOIL IS TOUGH



A while back I used a photo of the Town Dock at Oak Point to show how resistant the "pasture" types of birdsfoot trefoil are to frequent harvest. In this case "frequent harvest" is weekly mowing to a height of 3". I am aware of both the frequency and height since I'm the one who mows the jetty every week from spring into fall. As long as some leaf tissue is left on the plant birdsfoot trefoil recovers very well.

SAVE THE DATE:
VT DAIRY PRODUCERS CONFERENCE
Feb. 18, 2025
South Burlington, VT

WHAT'S HAPPENING ON THE FARM

While in the midst of August we're beginning to wind down our Summer Experience in Farm Management internship program. Our four students had the opportunity to show one of Miner Institute's heifers at the Clinton County Fair in July. The weeks leading up to the fair were packed with training, clipping, and washing the heifers in preparation for fair week. Once our five heifers and two cows arrived at the fairgrounds they were given lots of attention from Miner Institute students, employees, and fair visitors. While at the fair, our two cows, 4289 "Jade" and 4403 "Super Nova" were kept on their 3x milking schedule. The girls did an amazing job making sure they were milked promptly at 4:30AM, 12:30PM, and 8:30PM. It was a successful fair week. We even took home a handful of placings and enjoyed engaging with the community. Once the show was completed and the fair finished, our animals returned to the Miner farm safe and sound.

Back in the barns, the heat and humidity have really gotten to the cows in the past few weeks. We've seen a huge increase in mastitis cases along with a significant drop in our daily herd production. The sick cows have been taking longer to recover in comparison to the colder months. Our fresh cows have been doing well considering the environmental circumstances. August is the month our calf feeders have been preparing for! With 82 calves due this month, panels and stalls have been pressure washed, weaned calves have been promptly moved out of the barn, and vaccinations have been given fully up to date. We're now just awaiting the arrival of our new calves.

— Nicole Roblero
nstover@whminer.com

PACKING, Continued from Page 1

member. Often the "new guy" gets the packing job. Make sure he or she knows the importance of the job and proper techniques for using the blade and silage packer.

Chop forage at the proper DM.

- Drier forage requires a greater packing density to achieve similar porosity as wetter forages. Need to exclude oxygen to avoid heating and spoilage.

The fill rate (tons per hour) should be less than the tractor weight (in pounds) divided by 800.

- 57,000 lb tractor weight/800 = 71 tons/h maximum
- The fill rate was recognized as a continuous challenge for us given changing weather conditions that are drying the forage in the field too quickly or impending rain, changing distance to bunker from fields, as well as lack of space to safely add another tractor to some bunkers for packing.
- The person packing needs to control the fill rate and communicate when the rate is too fast to the truck drivers.

Spread incoming forage in thin layers (6" or less).

- Our fill rate was too fast at times, causing layers to be too thick.
- Packing tractor tires should pass over the entire surface before the next layer is added. Don't miss spots, especially the edges.

Pack for an hour after the last load is delivered to the bunker.

- We stopped packing too soon after the last load.

The overall take home message from our meeting was to pack, pack and pack some more to exclude oxygen, minimize DM loss and prevent heating during storage and feedout.

— Heather Dann
dann@whminer.com

CORNELL NUTRITION CONFERENCE
October 22-24, 2024

Featured Speakers in 2024 include:

- Dr. Jackie Boerman, Purdue University: *Timing and extent of skeletal muscle depletion and accretion*
- Dr. Billy Brown, Kansas State University: *Setting calves up for success: Pre- and postnatal nutritional strategies*
- Dr. Phil Cardoso, University of Illinois: *Amino acid balancing related to health and reproduction in dry and lactating dairy cattle*

For more information, visit https://cals.cornell.edu/animal-science/events/cornell-nutrition-conference

POTASSIUM NEEDS FOR MODERN-DAY ALFALFA

I recently came across a paper in the *Agronomy Journal* that explored the value of annual potassium fertilizer (K_2O) applications in alfalfa. The researchers, from the University of Wyoming, Laramie, tested four rates of potassium in the same alfalfa plots for five years in a row. The goal was to find the most economical rate of potassium fertilizer for alfalfa under modern management and economic conditions.

This paper caught my eye because most of the research on potassium in alfalfa was conducted years ago, and it's rare to see such a fundamental research question being re-examined. We've long known that large quantities of potassium are needed for most forage crops (particularly legumes) and that it plays a crucial role in regulating plant protein production, photosynthesis, moisture conservation, and stress tolerance. Potassium has also been linked with winter survivability, an especially important issue for us here at Miner Institute and all those who are prone to harsh winters.

So how much potassium does an alfalfa crop really need? According to the International Plant Nutrition Institute, if you get 4 tons per acre of alfalfa dry matter each year (11.4 tons/acre as fed) that would remove about 200 lbs. of K_2O per acre. Now, if the 333 lbs. of muriate of potash required for this sounds prohibitively expensive, I'm with you. Fortunately, most soils are very good at supplying potassium to plants. There's even a little bit of free potassium that is chemically released from the weathering of soil minerals each year. Dairy producers also have lots of manure at their disposal, which is an excellent source of potassium along with other nutrients.

The major concern with manure is how to apply it without damaging the alfalfa crowns. While use of a drag line and/or creative application timings may overcome some of these issues, the nitrogen present in the manure may be better suited for use in a crop that can't fix nitrogen. Also, the application of manure is likely to increase weed competition along with competition from grasses present if the alfalfa was planted as part of a mixture.

Perhaps a better option is to build up soil potassium levels through manure applications prior to alfalfa establishment. Just keep the rate below 20,000 gal/acre to reduce the risk of sodium toxicity, especially if spreading occurs just prior to seeding. In my opinion, a cover crop after corn could be a great candidate to load up with manure in preparation for a spring alfalfa seeding. This would help to hold the manure in place and release nutrients to the establishing crop over time. If a corn field in an alfalfa rotation is low in potassium, you could build the potassium levels over time by incorporating or injecting enough manure to meet the corn's nitrogen needs. This is because manure has a higher potassium-to-nitrogen ratio than corn silage does. You will build potassium even faster if you harvest the field for grain or snaplage rather than silage since lots of potassium remains in the crop residue.

Starting out with enough potassium is the first step in feeding an alfalfa crop, but the replenishment of potassium over time may be even more important when it comes to the long-term productivity of the stand. The researchers from Wyoming found that alfalfa responded well to annual potassium application, with 100 lbs./acre being the most economical rate on soil that tested in the moderate to high range for potassium content. While this information is more applicable to Wyoming growers than New York growers, that is certainly more potassium than we apply to the alfalfa at Miner Institute.

What's even more interesting is that the researchers found that early harvested alfalfa (late bud stage) yielded best with 50 lbs./acre more potassium than the late-harvested alfalfa, even though they were both cut the same number of times in the year. Harvest recommendations have changed in alfalfa over the years, and more growers are cutting alfalfa in the vegetative stages to maximize quality. This may mean that older university fertilizer recommendations could be shorting some fields on potassium.

Recommendations aside, a lot of us recently got in the habit of shorting crops of potassium simply because of the recent potash shortage and corresponding price spike. While it may have been a good short-term decision, the long-term consequences to yield and stand life will undoubtedly catch up with anyone who makes soil depletion into a habit. Applying excessive potash, on the other hand, could be equally unwise. Grasses and legumes can be prone to luxury uptake of potassium which could cause problems if you use the field for dry cow feed at some point. This "overconsumption" could also get expensive… like overeating at an expensive restaurant.

— Allen Wilder
wilder@whminer.com

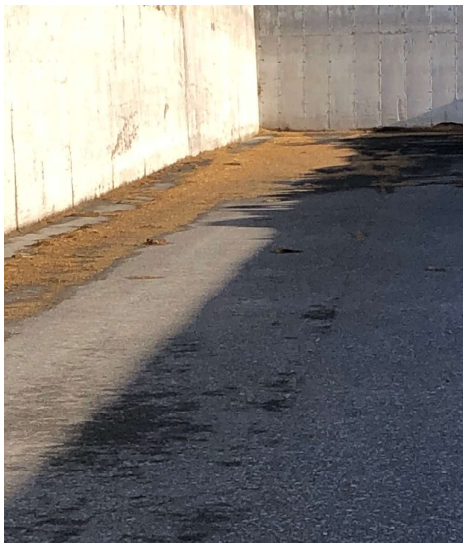
FLOORS FOR BUNKER SILOS & DRIVE-OVER PILES

I've written before about the advantages of asphalt vs. concrete floors for the floors of bunker silos but not for several years so it's time for a review. We were unhappy about how quickly the concrete floor was wearing on what at the time was the only bunker silo at Miner Institute, so we had asphalt floors installed on two new side-by-side bunker silos we built next to it. There was little risk to this decision since I'd looked at the asphalt floors in several bunker silos, all 15+ years old and still in fine shape. Asphalt vs. concrete is Chemistry 101: Concrete is lime-based while silages are highly acidic, so a concrete floor starts deteriorating the first time you use it. Asphalt, on the other hand, is petroleum-based so is impervious to silage acids.

The attached photo by Rick Grant shows the asphalt floor in one of two bunker silos we built in 1992. At the time the photo was taken the floor was in its 30th year of use and still in fine condition. It's one of a pair of 28' x 130' silos; the asphalt floor in its twin was just as good. The last concrete floor we poured in a bunker silo became badly pitted in less than ten years with pieces of aggregate coming loose; we resurfaced it with asphalt. I see no reason why a farmer would ever use concrete for the floor in a bunker silo.

Asphalt can also be used for the pad for a drive-over pile, but unlike with a bunker silo there are no walls so a lot of edges. And unless the exposed edges are protected with a concrete lip or ramp they'll almost certainly start crumbling off when run over with forage trucks and packing tractors, reducing the size of the pad bit by bit. (Look at the edge of a paved road — lots of cracks where the asphalt meets the shoulder.) There are enough other advantages of a drive-over pile that this may not be the deciding factor, but it's something to keep in mind.

Should you apply a "seal coat" to an asphalt pad after a number of years? None of the asphalt silos I looked at, including one in Idaho that was 30 years old, had ever been seal-coated. In fact, when I asked that farmer if he'd ever applied a seal coating he looked at me as if I was daft. That said, this past spring Miner Institute applied seal coating to the asphalt floors on its bunker silos, with plans on doing so every 3 to 5 years. This was done in an attempt to seal cracks that were allowing water



to seep up from below the asphalt and spoil the bottom layer of feed. I would expect that installing perimeter drains around the silo plus plenty of gravel under the asphalt would prevent or at least minimize this problem. However, some of Miner Institute's asphalt silo floors are decades old so may be an exception. My attitude is "If it ain't broke, don't fix it": If an asphalt silo floor is in almost mint condition with no cracks, I wouldn't recommend seal-coating it. However, if cracks appear that may require a Plan B.

— Ev Thomas
ethomas@oakpointny.com

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had navel inflammation, and 23.4% failed transfer of passive immunity. There was no significant difference among source states or transport times, though other studies have found that calves have poorer health when transported farther.

Making sure calves are fed milk and/or electrolytes shortly before travel can help to combat dehydration, the largest cause of surplus calf morbidity. Dairy farmers should also ensure calves receive adequate colostrum, have no injuries, and can shift their own weight before transport. For a full list of considerations, The Calf Care Quality Assurance manual (free to read from www.calfcareqa.com) has a section for assessing fitness for transport.

Taking extra time to assess these animals may feel like a waste; however, they also deserve a fair shot at success. This all starts at the dairy, but ultimately the dairy, veal, and beef industries need to collaborate to improve the health and welfare of surplus calves.

— Alexandria Bartlett
abartlett@whminer.com

The William H. Miner Agricultural Research Institute
1034 Miner Farm Road
P.O. Box 90
Chazy, NY 12921

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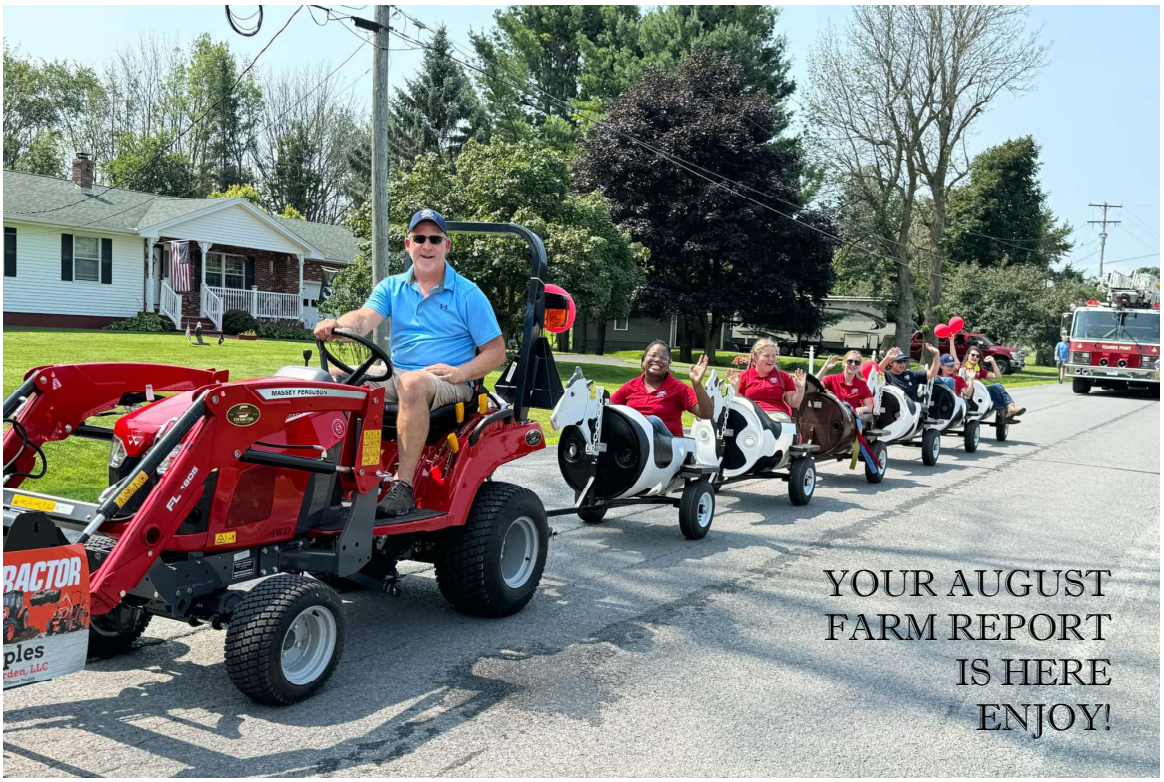

Miner Institute helped celebrate the 90th anniversary of the Chazy Volunteer Fire Department during a parade as part of the Chazy Old Home Day on July 27 in Chazy.

Closing Comment

Common sense is like a deodorant; the people who need it most never use it.

www.whminer.org
518.846.7121 Office
518.846.8445 Fax