FARM REPORT

MINER INSTITUTE
RESEARCH EDUCATION DEMONSTRATION
CHAZY, NY

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FROM THE PRESIDENT'S DESK: PERVASIVE LAMENESS

Lameness is a pervasive health challenge in our U.S. dairy industry. Recent studies estimate that as many as 30% of lactating cows are lame with a range between 10 and 85% in the Northeast. Lameness is painful, resulting in depressed feed intake, lower milk production, and poor reproduction. A commonly quoted economic analysis from Cornell University estimated that each clinically lame cow costs the dairy producer approximately $300.

The most recent USDA survey data from 2016 show that the majority of U.S. dairy cows have no access to pasture, and limited ability to exercise except for traveling to the parlor and within the pen. Adequate exercise results in healthier feet and legs and more research is needed to determine what constitutes effective levels of exercise.

Surveys indicate that the prevalence of lameness on dairy farms varies according to time of year, housing type, and stall surface. Prevalence of lameness in free stall herds with non-sand stall surfaces (33.7%) is greater than free stall herds bedded with sand (21.2%). Likewise, tie stall herds with sand as the stall surface also have less lameness (12.1%) compared with tie stalls using a non-sand surface (21.2%). One of the most widely cited studies was conducted by Peter Robinson at the University of California and found that greater lameness score results in less mobility, reduced feed intake, and therefore lower milk production. In fact, lame cows experienced between a 5 and 36% reduction in milk yield.

Here's something to keep in mind when designing facilities and grouping strategies:

See **LAMENESS**, Page 6

Help us spread the word about our Dairy Scholar Program!!

Learn more about this unique opportunity on page 5.

http://whminer.org/education/advanced-dairy-managment.php

HEADING OFF PROBLEMS BEFORE THEY BITE YOU IN THE BUTT

This will be a crop year that many farmers will want to forget but probably will remember for a long time, and not fondly: A wet May leading to late planting, more rain in June resulting in a late (and often weather-damaged) first cut, record amounts of rain in July in some areas, and the coldest August in decades. Some nice weather in September was almost too good to be true but was too late to save the day for many corn and soybean fields that were weeks behind in maturity.

According to Peter Van Soest, a world-class expert on forage digestibility, crops growing in persistently cloudy weather are often worse in digestibility than indicated by standard forage analyses. And as bad as I expect many of these forage analyses will look, that means ugly. Fiber digestibility of silage changes little during fermentation and storage — the changes in corn silage are primarily in acid content and starch digestibility. Therefore sampling chopped corn as its ensiled should provide an idea of how good (or bad) it will be coming out of the silo. If it's low in starch then fermentation should improve starch availability but your silos will not create starch. So if your fresh-chopped corn is high in moisture and low in starch you'd better plan on feeding a low starch, low DM corn silage. Protein content will vary depending on the nitrogen status of the crop – lots of sickly green corn this summer due to excessive rain leaching N from the soil and also preventing sidedress N application.

There's nothing you can do to improve the quality of this year's crops, but you can minimize the impact on milk production by working closely with your dairy feed consultant. Equip yourself with all the forage analysis data you have, do inventories of stored forages (hay and silage) so you know what you have, and if you'll be short of feed NOW is the time to make adjustments, either by considering forage replacements or by purchasing hay or silage. Some people make things happen, others watch things happen, while still others wonder what happened. Don't be in this third group.

— *E.T.*

FULL MOONS AND FROST

"Full moon, frost soon". Beginning in September many farmers start to fret about when the next full moon will be since it's well known that the chance of frost is greater during a night with a full moon. However, this is reminiscent of a well-known quote (misattributed to Will Rogers): "It isn't what we know that gives us trouble, it's what we know that ain't so" And this is true here: The topic has been studied thoroughly, and there's simply no direct relationship between a full moon and frost. Another old-time saying in farm country, "Clear moon, frost soon" has more validity, and perhaps is why some farmers cling to the full moon myth. The more of the moon visible in the sky, the more likely folks are to notice it. But there's every bit as much chance for frost when the moon is in its first or last crescent as when it's full.

If you want to prove this to yourself, look up a list of first fall frost dates for several locations in your general area. You'll probably see a wide variation in first frost dates between locations. If there's any validity to the relationship between a full moon and frost you'd expect to see little or no difference in frost dates since the same full moon that shines on you shines on the rest of the region — but there is. For example, according to historical records in Ogdensburg, NY there's a 50% chance that the first frost will have occurred by Oct. 2nd. But the "50% chance" date of a first frost in Gouverneur, only 30 miles away, is Sept. 22nd. Ten days difference--why? Because Ogdensburg is next to the St. Lawrence River (which reduces temperature drops on clear nights), while Gouverneur is inland.

— *E.T.*

OCTOBER ALFALFA HARVEST?

In most years I'm not in favor of a fall harvest of alfalfa, for several reasons: First, low yield: Those large leaflets can be deceiving, and there's often not as much yield there as meets the eye. That's the one disadvantage of having (and using) drive-over scales — they can confirm a very low yield! Second, sometimes fall-harvested alfalfa doesn't ferment well, especially if a silage inoculant isn't used. I've seen fall-harvested alfalfa come out of the silo as green as it went in, not smelling like silage ("The nose knows"), and when this happens the cows don't seem to like it. Third, even if you leave a long harvest interval prior to a fall harvest, research has shown that mowing alfalfa during the fall will usually reduce the yield of the first harvest next spring. Finally, fall-harvested alfalfa is often so high in protein and so low in fiber that it feeds more like a concentrate, quite unlike the alfalfa and alfalfa-grass you're used to feeding. "Cow candy"? "Rocket fuel for cows"? Perhaps, but too much candy can make you sick, while rocket fuel must be handled with caution.

Note the first three words of this article: "In most years". This year may be the exception because of the large amount of very late first-cut forage and both quality and quantity challenges anticipated with this year's corn silage. However, leafhopper pressure has been very high in some areas and all that rain further stressed alfalfa, both negatives in the "Should I mow?" decision. Therefore: If your alfalfa hasn't been stressed by leafhoppers and wet soils, and if there's enough yield to justify harvest and you'll use a silage inoculant and can store this forage in a separate silo, then 2017 may be the year for a fall harvest of alfalfa or alfalfa-grass. If you do so, work closely with your dairy nutrition consultant and rely on forage analysis including a fermentation analysis right after opening the silo. Depending on the results of these analyses, you may need to feed fall-harvested alfalfa as a relatively small part of the milk cow ration.

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OPTIMIZING CORN SILAGE

It's been a summer with a lot of rain early in the season, which delayed planting of corn, and continued with a mild summer bringing minimal heat. Thankfully the last few weeks of sunshine and heat have helped the corn grow closer to maturity. We can't control the weather, but we can control when we harvest and how we store the corn for silage. Harvesting corn too early or too late can cause poor quality silage. A Journal of Dairy Science article by Bal et al. (1997) compared corn silage harvested at early dent, 1/4 milk line, 2/3 milk line, and black layer on the milk production of dairy cows. Compared to the other harvest stages cows fed the 2/3 milk line corn silage had a 2.2 and .11 lb/day increase in milk production and milk protein respectively. They reported the optimum maturity stage for corn silage to be 2/3 milk line with 35% dry matter.

Now that corn is harvested it needs to be stored properly to maximize quality. Corn needs an anaerobic environment for the fermentation microbes to produce high quality corn silage. To provide the anaerobic conditions and reduce feedout losses it's vital to tightly cover the corn silage and achieve the right packing density. In the proceedings from 2011 Western Alfalfa and Forage Conference, Richard Muck reported that an 8.5 mil white polyethylene with a black underside improved dry matter recovery in the top 6 inches of silage. A Journal of Dairy Science article by Lima et al. (2017) evaluated the use of a 45 µm thick oxygen barrier placed along the sidewall and top. The oxygen barrier reduced losses of dry matter and nutrients at the shoulders compared to no covering. Once the right plastic is chosen then creating a tight seal on the bunk or pile is just as important. Make sure that the ends of the plastic aren't blowing in the wind, allowing oxygen to penetrate the pile. It's important not only to store the silage correctly, but also to minimize loss during feed out. To minimize loss during feed out aim for a packing density of 13.2 to 17.6 DM lb./cu ft. Using a packer attached to the tractor will increase the weight when driving over the bunker or pile and will help achieve the correct packing density. Another source of loss during feedout is an uneven face that can allow for oxygen to penetrate and cause spoilage. One method to reduce this loss is by using a defacer which will keep a clean face on the corn silage bunker or pile. Muck states that a defacer will improve dry matter recovery by 1% even with good feed out rate and high packing density.

When the weather is less than ideal and you have little control over the quality of corn coming out of the field, it's important to properly manage the crop from chopper to feedbunk. Harvest corn at 2/3 milk line and 35% dry matter, use the right type of plastic to create a tight seal, achieve high packing density and use a defacer to reduce waste. It's the small details that will ensure high quality silage that your cows will be able to utilize and reach production goals.

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THE IMPORTANCE OF CORRECT VOLUME FOR THE PENN STATE PARTICLE SEPARATOR

Chances are you've used or observed someone using a Penn State Particle Separator, a very useful tool that can be used on farms to determine the particle size distribution of feedstuffs, total mixed rations, or refusal TMR samples. The recommended particle size distribution percentages can be found on Penn State's Extension website, and we can debate those recommendations another time. Instead I'd like to focus on the importance of using the correct volume of sample in the PSPS.

Volume:	19mm Sieve	8mm Sieve	4mm Sieve	Pan
1400 mL	3.4%	51.8%	10.5%	34.3%
700 mL	2.6%	43.6%	16.1%	37.7%
2200 mL	7.1%	56.2%	8.4%	28.3%

The recommended volume for a sample is 3 pints (1400 ml). It's important that we measure the amount of material going into the PSPS by its volume and not by its mass. The reason is that the dry matter percentage of a feedstuff or TMR sample will greatly influence how much is going into the shaker box. For example, 1400 ml of wheat straw with a dry matter of 87% will have a mass of 100 grams while the same volume of corn silage with a dry matter of 32% has a mass of 450 grams. The ingredients in a TMR can result in a similar situation. For instance, when comparing two diets that were fed during a trial this past summer, diet A's 1400 ml volume had a mass of 485 g and diet B's mass was 360 g, respectively. The two diets had very similar dry matter percentages, but differed in forage-to-concentrate ratios.

To reinforce the importance of using the correct volume, I grabbed some lactating TMR from the dairy here at Miner Institute and shook it out, but varied the volume of TMR. The three different volumes I used were 1400, 700, and 2200 ml. In the table note the differences between the correct volume (1400 ml) and the volumes that were either too small or too large.

By using a smaller than recommended volume there were a smaller amount of particles retained on the top two sieves and a larger amount in the bottom two sieves. When looking at a larger than recommended volume the opposite results were observed. If the incorrect volume is used, an incorrect assessment of the feedstuff or TMR can be made and this can be critical when making decisions on farm.

In summary, use the correct volume when using the Penn State Particle Separator. Purchase a measuring beaker/pitcher, cost is about $15 online, to help make better assessments of feedstuffs and total mixed rations on farms. Data and measurements are only correct when collected correctly.

— Wyatt Smith
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"No other occupation is so vitally important to the human race, nor requires such a wide range of practical and technical knowledge, as farming."
— William H. Miner, 1915

DAIRY SCHOLAR PROGRAM

The Advanced Dairy Management program was initially developed in 2000 as a 15-credit course for juniors and seniors at the University of Vermont. Students from the University of Connecticut, University of Massachusetts, and Morrisville State College have participated in the program. We are excited to cast our net to a broader population of dairy science/animal science/ag business students who are eager to spend a "semester abroad" in Chazy, NY. The small class size allows students to interact closely with our faculty and staff. A flexible course schedule enables students to take advantage of many learning opportunities beyond the scope of the classroom without missing any valuable class time.

The 15 credit residency program is divided into five courses:

• **Farm Management Practicum** - Critical thinking skills are developed to evaluate dairy farm systems through a combination of classroom lectures, work experience in our 350-cow dairy barn and farm visits. Field trips provide opportunities for high impact learning through exposure to a bigger, broader view of dairy farming. In 2018 we will be traveling to the central valley of California to visit dairies and spend time at the World Ag Expo. Interactions with producers and ag business professionals throughout the semester encourage students to become influential leaders in the dairy industry.

• **Crop Production –** Lectures focus on annual cropping and nutrient management decisions made by dairy farmers in the Northeast. Students are involved in the step-by-step process used for planning the agronomy program at Miner Institute.

• **Dairy Cattle Nutrition –** Lectures and laboratory time focus on nutrients and their use by cattle for productive functions. Impact of forage and feed quality on ration balancing for dairy cows are discussed using computer models. Case studies are also used to illustrate concepts.

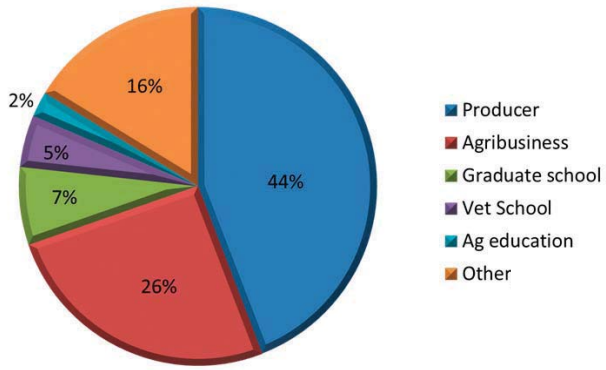
• **Agricultural Research Experience** - Lectures about the research process, basic statistics and experimental design provide students with skills to develop a research hypothesis and design an experiment to test the hypothesis. Statistical methods are explored through modules where data associated with dairy management and crops production is collected, summarized and presented.

• **Agriculture Seminar –** Weekly class addresses "hot topics" in agriculture through student presentations of journal articles used to enhance speaking and organizational skills in addition to adding to the range of topics discussed during the semester.

The Dairy Scholar Program takes place in the spring semester from mid-January to mid-May.
The deadline for applications for the spring 2018 semester is October 20.

For more information, contact Wanda Emerich
at emerich@whminer.com or call 518-846-7121, ext. 117
or visit http://whminer.org/education/advanced-dairy-managment.php

What have Advanced Dairy Management alumni gone on to do?



"I equate the semester at Miner Institute to an immersion program in a foreign country. After four months spent living and breathing dairy science, you realize that you truly have learned a new language. 'Corn silage processing score', 'Latin square designs', and 'rumination time per unit of NDF' become casual lunch-time topics of conversation. My semester at Miner was invaluable and the highlight of my college career."

— Melissa Woolpert, 2013 student

"No other occupation is so vitally important to the human race,
nor requires such a wide range of practical and technical knowledge, as farming."

— William H. Miner, 1915

WHAT'S HAPPENING ON THE FARM

I walk out to the barn in the morning and it's quiet and still. It's cooled down enough now that the fans don't run in the early morning. The sun has just peaked over the horizon and the barn is filled with the warm yellow glow of the morning sunlight. There is a thick layer of fog outside but it's already starting to burn off. The cows are resting in the stalls, some are walking back from the parlor or up eating but it's quiet and it's perfect weather for making milk! These are the mornings that I love. No matter what yesterday was like and no matter what challenges we will face today for a few minutes there is stillness. Maybe it's the routine of dairy farming that I love so much – the cows are oblivious to the trouble or frustrations that we face – they just carry on with eating, milking and ruminating. There is something reassuring about that predictable routine. Soon enough the quietness is broken and the busyness of the day begins. We've had more than our normal number of cows calving through the late summer – 61 fresh in August which is more than any month this year. We had just 4 dead on arrival – a set of twins and two others. That is a 6% DOA rate which is our running average for the past 12 months. We continue to struggle with low blood calcium levels in the fresh cows — tweaking the pre-fresh diet to try to eliminate this sub-clinical milk fever. Another bottle-neck has been an over-crowded fresh pen — with heavy calving schedule and a transition cow study underway. We keep cows in the fresh pen longer than normal and we have had periods of time where our fresh pen was overcrowded (I think we caused some ketosis). Part of the overcrowding is due to the fact that we also have mastitis and injured cows in this pen. We've made use of our sick pen for some extra animals and tried to move cows daily out of the fresh pen as they are eligible to go into the main herd.

Milk production has been averaging in the low-mid 90's and the SCC has stayed below 120,000 through the summer. By the time the *Farm Report* goes to print next week we will be chopping corn. Our neighbors have already started but our corn isn't quite ready yet. In the third week of September the dry matters still ranged from 25-29%. In the meantime, the guys have been working on the chopper and getting things ready so that when the corn reaches the correct maturity and dry matter, we will be ready to roll. We finally got our CB radios working in all the trucks, the chopper and packing tractor. This will make communication so much easier and safer. This year we have a Buck Rake on the front of the packing tractor instead of the blade for pushing and layering the forage in the bunk. We also are using a 9 wheel Big Foot forage packer on the back of the packing tractor for the first time. We needed it for some narrow research bunks but will use it for all the corn bunks to hopefully get improved packing density and thus better fermentation and stability.

— *Anna Pape*
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LAMENESS, Continued from Page 1

Minnesota researchers reported that the one factor most highly associated with lameness is time outside the pen – in other words respecting the cow's time budget and ensuring that her basic behavioral needs for resting and eating are satisfied.

What happens to the productivity of lame cows when they are overstocked? Several years ago at Miner Institute we evaluated the impact of greater stocking density of stalls and headlocks on milk yield of non-lame (score 1 and 2) versus lame (score 3 and 4) cows. At 100% stocking density, lame cows produced about 9 lb/d more milk than non-lame cows. But, when stocking density increased to just 113% of stalls and headlocks, there was a pronounced advantage for the sound cows that resulted in over 11 lb/d more milk. As stocking density increased further to 131%, the disparity in milk production was over 26 lb/d! These losses in milk production reflect lost rest and rumination for the lame cows. Lame cows are not very competitive, and even modest overcrowding makes the problem worse.

Fortunately, cows with locomotion problems can improve quickly when they are placed on more comfortable walking surfaces such as pasture. Research from the University of British Columbia found that the gait scores of lame cows improved by 0.22 units per week when they were kept on pasture compared with free stall housing. We can use this information to our advantage as we design dairy facilities that allow access to more comfortable standing, walking, and resting surfaces. Even if access to pasture is impractical, there may well be a benefit to providing the cow with enhanced flooring – maybe over the dry period – and deeper bedded stalls.

The bottom line is that lameness results in a loss of 5 to more than 30% in milk production, greater culling, and impaired fertility. It's a major welfare and productivity challenge that our industry has struggled with for too many years. It's one that we must solve for the sake of herd profitability and the basic well-being of our dairy cows.

— *Rick Grant*
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MANURE APPLICATION IN ADVERSE WEATHER AND DURING THE WINTER

orn silage harvest is underway in the North Country with fall manure application soon to follow. Proper manure application is important for maximizing nutrients for crop production while minimizing water contamination risk. The new CAFO rules have strict limitations on manure application in relation to field conditions and runoff risk, so now is a good time to revisit best management practices for manure application.

On August 30th a manure hauler training session was held at the Institute sponsored by the New England Interstate Water Pollution Control Commission/Lake Champlain Basin Program, Clinton County Soil and Water Conservation District, and PRO-DAIRY. Karl Czymmek provided an overview of best practices for manure application and requirements of the new CAFO permit. The most important regulatory change is that farms cannot apply manure when soils are water-saturated and/or when there are 4" or more of frost or snow. Another important aspect is keeping track of the weather and avoiding manure application when significant rainfall (i.e., ≥ 1") is forecast. Adequate manure storage is a key for larger farms since storage allows farms to avoid application during unsuitable times for field application.

Cornell University has developed winter and wet weather manure application guidelines to help farms reduce runoff and water contamination risk. Twelve factors are used to evaluate relative risk and when and where manure should be applied based on field conditions, weather, and application management.

1. ***Saturated soils:*** Soils are saturated when all pores are filled with water. Additional water causes immediate runoff, ponding, or subsurface flow.If soils are saturated and then frozen, this creates a barrier to water infiltration. Soil drainage class is the best overall predictor for likelihood of saturation in relation to weather. Manure should not be applied in saturated soil conditions.

2. ***Frozen soil, snow and ice:*** If soil was relatively dry prior to freezing, it allows more water infiltration creating less runoff relative to soil frozen with water-filled pores (termed 'concrete frost'). Several inches of concrete frost presents a high risk for runoff since it prevents water infiltration and manure application should not occur in this condition. Layers of ice within the snowpack or on the ground also increase runoff risk, particularly when it's ≥ 0.5". If ice can be broken up by tillage equipment and soil beneath froze in a dry condition, there is a lower risk of runoff. Manure application on snow-covered ground presents a high risk for runoff loss, especially if applied before a snowmelt event. Manure applied earlier in the season that is integrated into the snowpack presents a lower risk, however new regulations dictate no manure application when snow is ≥ 4".

3. ***Ground cover condition:*** Ground cover reduces the risk of runoff due to promoting water infiltration. Cover cropped cornfields and hay crops present a lower risk of surface runoff all other factors being equal, however other factors such as frozen soil layers, snowpack, field slope, and proximity to surface waters must also be considered.

4. ***Field slope:*** Slope length and steepness must be considered in relation to other risk factors (drainage class, weather and proximity to water). Avoid manure application where water collects and moves off the field to ditches or surface water. Longer slopes with moderately well drained soils present a lower risk of runoff all other factors being equal.

5. ***Surface inlets, tile drains, ditches, and concentrated flows:*** CAFO regulations state that manure must not be applied within 100 feet of surface tile inlets, groundwater wells, springs, surface waters and/or drainage ditches. Manure application should also be avoided where concentrated flows and severe erosion occur. Ideally, these areas would have a grassed waterway to further reduce runoff risk. If manure application causes visual impairment of tile-flow, stop manure application immediately and incorporate manure to promote mixing with soil and reduce preferential flow.

See **MANURE**, Page 10

A POTPOURRI OF CALF MANAGEMENT RESEARCH

Dairy producers are making progress on pre-weaned calf management according to the USDA's National Animal Health Monitoring System (NAHMS) Dairy 2014 study. Although management practices are getting better on-farm, there is still room for improvement. Researchers from the U.S. and Canada are working to better understand producer attitudes towards implementation of best management practices as well as identifying new management practices to promote calf health and growth.

Guelph Research – Providing the appropriate amount of a good quality colostrum that is free of bacterial contamination is a best management practice that all producers should implement. The challenge is that the feeding process and equipment can introduce bacteria to the colostrum and then to the calf. Visual assessment of feeding equipment has been used traditionally to evaluate the cleanliness. A laboratory culture for bacterial contamination is better but can be costly and the results are not available immediately. Interestingly, the food service industry and the health care industry have been using rapid on-site tests (luminometryswabs) based on adenosine triphosphate (ATP) bioluminescence. The tests use an enzyme and react to ATP (i.e. energy source for plant, animal, and microbial cells) indicating that organic matter including bacterial contamination is present. Nipple bottles, pails, and esophageal tube feeders from 52 commercial dairies in Ontario were scored visually and tested by traditional laboratory culture method and several commercially available swabs for bacterial contamination. Visual assessment was a poor indicator of standards of cleanliness! In addition, the PRO-Clean and SuperSnap test were also poor indicators. However, the AquaSnap Total and the MicroSnap Coliform tests were viable on-farm tests. Producers or their advisors should concider using these tests as part of a calf health monitoring program.

Washington State Research – Training a calf to drink out of a pail can be time consuming and frustrating for both the calf and the feeder. Predicting when or which calves might need additional time to learn how to drink from a pail can help in allocating time or labor required to successfully train calves. Based on a study with 1,235 calves, training calves to drink from a pail took on average 3 days with a range of 5 hours to 10 days. Calves after 3 days of age that needed assistance with drinking were more likely to be born a twin, be a bull calf, have a heifer as a dam, and be born during cooler weather. As expected, attitude and posture of calves was highly related to milk consumption.

Virginia Tech Research – Respiratory disease can be a common aliment of calves. Detection methods include physical examination, approach tests with a human or novel object, and infrared thermography. Automated detection systems could be useful for earlier disease detection or reduced labor for disease detection. Thirty calves were group housed, fed with an automatic calf feeder and fitted with an accelerometer so step activity, lying behaviors, and feeding behaviors could be recorded. Calves with respiratory disease were less active, had reduced lying frequencies, and ate less milk than healthy calves before (1 to 2 days) or during the health issue. Changes in behavior monitored with automated systems seems to be a viable approach to prospectively identifying disease.

University of Minnesota and University of British Columbia Research – Automated calf feeders are being used in more dairies across the US. This type of feeding system houses calves in groups so producers have concerns about calf mortality, illness, and treatment rates. Twenty-six Midwest dairies were evaluated. The median mortality rate was 2.6% indicating that automated feeding systems can have mortality rates at or below the US average. Mortality increased when the age range of the calves increased suggesting that older calves were a source of illness for younger calves. Treatment rates increased with bacterial count in the feeder tube, emphasizing the need to prevent bacterial contamination of the milk/milk replacer and the calf environment.

Ohio State Research – Implementation of best management practices is influenced by producer attitude. Attitude is a positive or negative response towards a management practice or concept that often predicts future behavior. A survey of 727 out of 1,488 dairy producers in Ohio and Michigan found that the majority of conventional producers (64%) separate the calf from the dam within 30 minutes to 6 hours after birth while only 42% of organic producers separated the calf from the dam during the same time period. Attitude about cow-calf separation differed between conventional and organic producers. Sixty-two percent of organic producers agreed that more than 2 hours before separation is beneficial for the health of the dam and calf compared with only 32% of conventional producers. Surprisingly, few conventional (10%) and organic (3%) producers measured colostrum quality. Conventional producers were twice as likely as organic producers to agree that measuring colostrum quality is useful to make decisions on feeding calves colostrum. However, that practice was not followed routinely in part because it was perceived as time-consuming more often by organic producers than conventional producers. This study found several differences in attitudes and management practices between conventional and organic producers. Specific producer-oriented education programing is needed to address the different attitudes relative to implementing best management practices for calf health and growth.

– Heather Dann
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CALIFORNIA MAKES MOVES TO REDUCE METHANE EMISSIONS

While there's still a debate on why global methane gas emissions have been increasing recently, it's no secret that agriculture, particularly livestock and rice production, is a source of methane that with carbon dioxide and nitrous oxide accumulates in the atmosphere and contributes to an increasing earth surface temperature. In the fight to slow climate change the nation's leading agricultural state, California, focused on the greenhouse gases produced by livestock. California governor Jerry Brown signed legislation last September that for the first time aims to regulate greenhouse gas emissions from livestock operations. The new law, which takes effect in 2024, requires dairies and other livestock operations to reduce methane emissions by 40% of 2013 levels by the year 2030.

As you can imagine, California's dairy industry is fighting the new law. How will methane emissions be measured? What is the cost? Margins are already slim on many dairy farms, so to suddenly be faced with the challenge of reducing their methane emissions could be the push that prevents many farms from keeping their heads above water. California is the nation's highest producer of milk, which is a leading contributor to the adoption of this legislation. With New York being one of the top five milk producers it seems likely that these regulations are in our not-so-distant future. It might not be a bad idea to start preparing now!

Reducing methane emissions is a good idea in theory since methane is about 20 times more potent greenhouse gas than carbon dioxide due to its ability to retain heat. However, this proves to be much easier said than done. There is no clear-cut answer when it comes to reducing methane emissions on the farm. In a perfect world we could install anaerobic manure digesters on every dairy farm. Digesters offer the opportunity to convert manure into electricity for the producer to use, enables beddings to be reused, and many other potential benefits. However, despite the current incentives and potential funding opportunities, installing and maintaining a digester is not always financially possible for every dairy farm.

Recent research has focused on nutritional changes that can be made to lactating dairy cow diets to mitigate their methane emissions. The main goal of many nutritional methane mitigation strategies is to reduce the amount of acetate formed and increase the amount of propionate formed during microbial fermentation of feeds. Acetate production results in free hydrogen that can then be utilized to produce methane, whereas the production of propionate requires the uptake of hydrogen, leaving less hydrogen available for methane production. Many factors should be taken into consideration before making any nutritional changes, including but not limited to impact on rumen health, production parameters, and feed prices.

There are options beyond anaerobic digesters and nutritional changes, and all come with potential benefits and limitations. The good news is you still have time! Take that time to consider what methane mitigation strategies would work best for you and your farm.

— Ashley Cate
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SAVE THE DATE: DAIRY DAY 2017

Thursday, Dec. 7

10 am - 3 pm

Guest Speaker:
Dr. Mike Van Amburgh, Cornell University

More details will be available soon.

Dairy Day is an educational seminar held annually at Miner Institute.
Find proceedings from past year's meetings at http://whminer.org/outreach/

IGNORANCE IS BLISS

One fall day many years ago while driving the back roads in Franklin County I stopped by to visit a dairy farmer who had some crop questions. I noticed a recently-erected concrete stave silo on his farm and mentioned it. "Yep, it's a beauty, and I got a great deal on it." "How's that?" "Well, it's a 20' x 60' that's supposed to hold 500 tons of corn silage, but I just finished filling the silo and this one holds over 600 tons." "Really? How do you figure that?" "It's real simple. I had 30 acres of corn to chop, and just before I started the guy who sold me the seed came out and cut a couple armloads of stalks from just inside the field, weighed them, punched some numbers into his calculator and told me that I had a real fine crop, 20 tons per acre. So 20 tons times 30 acres equals 600 tons, not 500. Some deal, eh"?

OK, so what would you have said? Would you have told him that he just can't have someone cut a dozen or so stalks in one place in a field, weigh them and expect that to represent the entire 30 acres? And for what purpose — more accurate inventory management? The farmer was very happy believing what he did; why ruin his day? No, you'd probably have said about what I did, that indeed he got a great deal on his silo. I then answered his crop questions and went on my merry way.

— *E.T.*

MANURE, Continued from Page 7

6. ***Surface water:*** If field runoff can directly flow to a stream, extra caution must be used when gauging runoff risk and these areas should not receive manure.

7. ***Wells or karst features:*** Avoid applying manure where bedrock fractures exist. Limestone outcrops close to the surface can present a risk by channeling runoff through subsurface flows to downslope areas.

8. ***Weather forecast:*** Avoid manure application when significant rain (≥ 1") is predicted within 24 to 48 hr. While the actual risk of runoffdepends on soil moisture, slope, soil type, other factors, manure should not be applied right before a large rainfall event is forecasted. Make sure to keep records of rainfall, manure application and weather forecasts if you are a CAFO farm.

9. ***Snowmelt events:*** Avoid manure application on snow of any depth when the forecast calls for temperatures above freezing for extended periods. Temperatures ≥ 40° F substantially increase the rate of snowmelt.

10. ***Manure consistency:*** Liquid manure has a higher risk of mobilization viasurface runoff and subsurface drainage compared to semi-solid manure. Semi-solid manure can still runoff in adverse weather conditions and should be managed according to the guidelines presented here.

11. ***Application method:*** Incorporate manure soon after application with injectors or tillage tools whenever possible to reduce runoff risk. This is also a wise agronomic practice and increases nutrient efficiency.

12. ***Application rates:*** All else equal, higher manure application rates increase runoff risk, especially if not incorporated. Lower application rates reduce runoff risk in adverse weather conditions occur.

In summary, best manure management practices are important for making efficient use of manure nutrients and minimizing threats to water quality. It is critical to understand the vulnerabilities of all your fields and pay close attention to the weather.Dairy farming is under closer scrutiny than ever and it is important to set a good example to demonstrate that we are doing the best job possible.

For more information: http://nmsp.cals.cornell.edu/publications/files/WinterSpreadingGuidelines2015.pdf

— *Eric Young*
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Closing Comment

Have you ever noticed that all the telescopes and dishes searching for intelligent life in the universe are pointed away from Earth?

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