FARM REPORT

In This Issue:

Visit our blog:
minermatters.com

Like us on Facebook
facebook.com/WhMinerInstitute

FROM THE PRESIDENT'S DESK: TIMING IS EVERYTHING

By the time this issue arrives in May, first cut will be starting or just around the corner for many readers. Here are some key points to keep in mind heading into the 2018 haycrop harvest.

Recommendations on when to cut your forages typically rely on alfalfa. Research at Cornell University by Jerry Cherney suggests that the height of alfalfa predicts when it and grass fields should be cut in any locality. When alfalfa near a grass field is about 13 inches tall, then it's time to cut pure grass stands. If alfalfa is mixed 50:50 with grass then cut when alfalfa is about 23 inches tall. The key is to harvest early: when 30-hour NDF digestibility is close to 70%. Don't wait to cut mixed stands until the alfalfa is ready, otherwise the grass will be too mature and will limit dry matter intake and prevent your cows from reaching their genetic potential.

Grasses contain more potentially digestible fiber than legumes, but they need to be harvested early to capture that benefit in milk production. Whether in pure stands or in alfalfa-grass mixtures, when the goal is harvesting high quality forage for the lactating herd there is a "point of no return." Research shows that NDF digestibility for grasses and legumes can decline by half to one percentage unit per day or more. So, a delay of several days in harvest can make a potentially great crop into only a mediocre crop or worse.

High-producing cows with greater appetites and higher dry matter intake will be more quickly limited by rumen fill when consuming average or low-quality grasses compared with legumes. Legumes ordinarily have a 15 to 20% greater initial rate of NDF digestion versus grasses, but the extent of NDF digestion is 30 to 40% greater for grasses reflecting 30 to 40% less lignin. Highly productive dairy cows can effectively use grass forage as a source of fermentable NDF. But, grass needs to be harvested at earlier maturities with less lignified NDF to enhance NDF digestion rate and extent of digestion.

The normal range in 30-hour NDF digestibility for grass forage is about 55 to 70% (normal range is defined as the average ± one standard deviation), and 45 to 58% for alfalfa. To capture the benefit of greater fiber digestibility we

See **TIMING**, Page 7

A VERY COLD SPRING

It's been a long time since we had such a miserably cold and icy April, which already has had an impact on spring planting. This will continue to cause problems, but to what degree depends on what you do, and when. Plant breeders have improved the cold tolerance of corn hybrids, but corn is not peas and planting in cold, wet soil is a recipe for disaster. Soil temperature at the 2" depth should be at least 50°F; you can cheat a bit on temperature in May if the soil is well-drained, but only by a couple of degrees. Many years ago we planted corn on April 27th and could see rows in about a week, but it was a hybrid (Pioneer 3925) proven to be very cold-tolerant, and soil conditions when we planted were ideal. Before you plant corn check the weather forecast: Cold rain on cold soil is particularly harmful. Forage seedings are more tolerant, but that's no excuse for mudding them in. And just because the calendar has rolled around to May is no excuse to till overly wet soils. If you can make a sticky ball from a handful of soil it's probably too wet for any sort of tillage.

What you can do while you're waiting for the weather to improve is whatever's necessary to get stuff planted in fewer days than normal when you finally can get on your land. This may mean more hours per day on the tractor, either planting or doing spring tillage. Perhaps hire someone to help with fieldwork for a week or two. Consider notill, especially for corn-on-corn fields that are stony enough that you'd have to spend a lot of time picking rocks. As the calendar progresses toward June, consider swapping any full-season corn hybrids for ones that are a week or more earlier. You won't lose a lot in yield potential and will have a better chance of chopping corn at the right maturity stage this fall.

— E.T.

THE INFORMATION AGE?

We're in "The Information Age", but it's not obvious from the amount of the data available from crop variety trials run by state universities. I'm not blaming the universities, which are limited in two ways: First, they only test the hybrids and varieties that seed companies choose to enter. For instance, in the past few years seed companies haven't entered any of their top-performing alfalfa varieties in Cornell University's trials that compare leafhopper-resistant varieties to non-resistant ones. Therefore, the trial is limited to comparisons with the old public varieties Oneida VR and Vernal alfalfa, plus N-R-G, a quality-enhanced variety developed by Cornell that isn't high yielding. The early leafhopper-resistant varieties had some yield drag. However, new varieties of both leafhopper resistant and non-resistant alfalfas have replaced many of these older ones. Is there still a yield drag with the newest leafhopper-resistant varieties? Who knows?!

Second, variety testing is expensive, especially when the evaluation includes forage analysis. That's why few universities (none that I know of) test the alfalfa varieties entered in their variety trials for forage quality — it's a matter of economics since forage analysis is expensive. With the recent publicity on reduced-lignin alfalfa, other seed companies are claiming that they also have low-lignin alfalfa varieties. But with no systematic quality testing in university variety trials it's difficult to know who has what. (Cornell University reports NDF and NDF digestibility in its grass variety trials but not in its alfalfa or red clover trials.)

The lack of independent/unbiased data means that farmers need to rely on their seed dealers for yield and quality data. However, while seed dealers can provide valuable advice on the crop varieties they sell, they tend to be slightly (and understandably) biased when comparing their products to those of the competition.

— E.T.

TROUBLESHOOTING WITH MILK FATTY ACID METRICS

Milk fatty acid metrics are gaining in popularity for use in troubleshooting situations where milk fat content is lower than desired. The milk fatty acid metrics are de novo, mixed origin, and preformed fatty acids groups and a fatty acid unsaturation index. The de novo fatty acids (<C16) and a portion of the mixed origin fatty acids (C16) are made in the cow's udder using the end products of rumen fermentation of carbohydrates. The other portion of the mixed origin fatty acids come from fat in the feed consumed. Preformed fatty acids (>C16) come from fat in the feed consumed and the mobilization of body fat, especially in early lactation. Milk fatty acid unsaturation index is the mean double bonds per fatty acid.

Dr. Barbano (Cornell University) has summarized the relationships between the milk fatty acid metrics and fat content for Holstein herds from the Northeast and from throughout the U.S. The table below shows the regression equations for each dataset. The good news is that the relationships, especially for de novo fatty acids, are similar between the data sets. This is exciting since the dietary and management practices are more diverse across the U.S. than in the Northeast.

If we use the regression equation from the 40 Holstein Herds in the Northeast, we can set up a quadrant approach that helps with troubleshooting. Melissa Carabeau (Woolpert) proposed this approach during her graduate work at Miner Institute. Now she works as a nutritionist for Poulin Grain where she can implement this approach with farms that are routinely receiving milk fatty acid metrics. Other nutritionists are implementing the approach too. In the figure, the quadrants are set based on the goal of a Holstein herd achieving at 3.8% milk fat with 0.85 g de novo fatty acids per 100 g of milk. The goal for most herds is to be in the upper right quadrant. Many farms that are looking to improve milk fat content are in the lower left quadrant. They need to evaluate factors that cause lower de novo fatty acids to identify possible solutions. The figure above shows some common causes. However, there are many other factors to consider.

Field experience and research have demonstrated that diets and management practices that increase de novo and/or mixed origin fatty acids result frequently in increased milk fat and protein. Typically, de novo fatty acids increase in response to improved rumen function or feed quality. Poor rumen health because of subacute ruminal acidosis (SARA) from diets containing too little physically effective fiber or too much fermentable carbohydrate, diets containing too much fat or specific fatty acids (RUFAL) that affect rumen biohydrogenation, poor bunk management that alters feeding behavior, and overstocking that affects time budgets can decrease de novo fatty acids in milk.

	De Novo Fatty Acids, g/100 g milk	Mixed Origin Fatty Acids, g/100 g milk	Preformed Fatty Acids, g/100 g milk	Unsaturation, double bonds/fatty acid
40 Holstein Herds (St. Albans 2015)	Y = 2.297X + 1.844 R^2 = 0.80	Y = 1.540X + 1.586 R^2 = 0.88	Y = 0.793X + 2.774 R^2 = 0.07	Y = -8.583X + 6.421 R^2 = 0.69
167 Holstein Herds (US 2016-2017)	Y = 2.233X + 1.800 R^2 = 0.61	Y = 1.892X + 1.179 R^2 = 0.79	Y = 1.289X + 1.911 R^2 = 0.35	Y = -7.449X + 5.971 R^2 = 0.31

Table 1. Regression equations for Holstein herds in the Northeast and across the US.

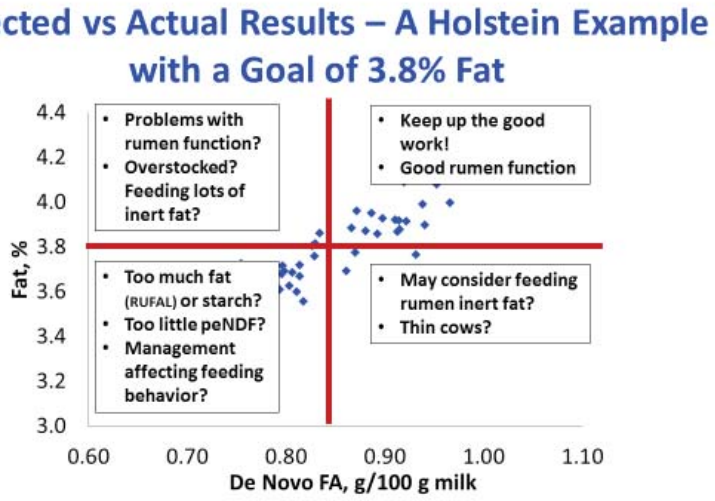

Figure 1. Quadrant approach to troubleshooting low milk fat content.

— Heather Dann
dann@whminer.com

TIME IS MONEY

Tough times in the U.S. dairy industry. Dairy farmers are price takers so there's little they can do to increase milk prices, which means that cost control is important. In previous articles we've discussed ways to limit input costs including fine-tuning fertilizer programs and taking advantage of early buy/early pay programs. Another area that can increase profits without adding expense is getting stuff done on time, and in the right way. "Time is money" isn't just a saying! Following are a few examples, most of which you've heard before, but which bear repeating:

1. It doesn't cost any more to plant corn in May than planting in June, but there are often big differences in yield and corn silage quality. And timely-planted alfalfa and alfalfa-grass seedings often have fewer weed problems because the young alfalfa plants provide competition to germinating weed seeds. I suggest including about 5 lbs./acre of Italian annual ryegrass in alfalfa-grass seeding mixtures if you're worried about annual grasses. Despite the "annual" in its name, some ryegrass will probably overwinter but shouldn't last past the first cut.
2. It doesn't cost any more to mow grass when it's in the boot stage or alfalfa when it's in the bud stage vs. mowing a week later. But your cows will know the difference since they can eat more high-quality forage and therefore make more milk. It's cheaper to supply protein in the forage than in the concentrate!
3. Spread out windrows to increase the drying rate of hay crops: The higher the yield, the more important this is. Increasing the drying rate will result in higher milk production potential regardless of whether the crop is alfalfa or grass. It will also make a difference in all cuttings, but particularly in that heavy first cut. Wide windrows also reduce weather risk since the quicker the forage gets from stem to silo the less chance it will get rained on or spend the night in the field. The best silage you can make is ensiled the same day it's cut — no sugar losses from sitting in the field overnight. And I prefer silage ensiled at 30-32% DM (which is slightly wetter than what most consider ideal) the same day it's mowed vs. that chopped at 35-40% DM the next day. And forage ensiled the day it's mowed seldom has butyric acid (stinky silage) problems.

Some farmers don't like wide windrows because they don't want to rake or merge them prior to chopping. While the forage in narrow windrows will eventually get dry enough to chop, consider how this occurs: The forage in the center and bottom of the windrow gets no sunshine and dries very slowly (if at all), while the top of the windrow gets very dry. When the farmer chops narrow windrows he may notice a considerable amount of "dust" discharged from the chopper spout. That's not dust, it's pulverized alfalfa leaflets from the top of the windrow! He's losing the best while keeping the rest. As for the argument that everything is OK as long as the average dry matter of the windrow is within the recommended range: Consider that a farmer standing with one foot in a bucket of ice water and the other in a bucket of scalding hot water is, on average, comfortable.

— Ev Thomas
ethomas@oakpointny.com

EVALUATING YOUR FARM

To grow and advance we must evaluate our farms including where there are opportunities for improvement. This should be done in the good and bad times, but it's especially important in times of low milk prices. Every penny spent on a farm should be going to good use, whether it's for labor, feed cost, or cow comfort. In evaluating your herd there are some common measurements that help determine whether your feeding program is achieving the milk production and components expected.

The first is milk production per cow per day, percent fat, and percent protein, which will let you know if you are meeting your goals. The next measurement is pounds of milk solids (fat and protein) shipped per cow per day, calculated by taking milk per cow per day multiplied by percent fat or percent protein then combining the yield of fat and protein. The goal for milk solids is shipping 6 pounds of solids per day per cow. The last measurement is income over feed cost (IOFC) on a per cow per day basis, calculated by subtracting the feed cost from income (milk production multiplied by milk price). Then that number can be multiplied by all lactating cows to evaluate the lactating herd IOFC. To evaluate the whole farm, the feed cost for dry cows should be included in the lactating herd IOFC. This can be done by subtracting dry cow feed cost from the lactating herd IOFC. These measurements can help evaluate and monitor your herd's performance and feed cost, which can be easily tracked using a program such as Excel.

In using these measurements, identify where your herd is at in performance and feed cost, then set short and long-term goals. Be sure to include everyone on the farm that would be involved in meeting these goals such as your nutritionist, feeder, herdsman, and financial advisor. Short-term goals would be changes that can be put into place quickly such as increasing the number of times feed is pushed up and making sure cows do not run out of feed. Long-term goals would be increasing the amount of forages grown on the farm and decreasing stocking density.

Short-term goals are usually obvious for someone outside the farm, because we often get tunnel vision and miss the basics. Making sure cows can reach the feed and that there is feed when the cows are hungry is an easy fix that will lead to increased intake and milk production. Another possible short-term goal is increasing feeding from once a day to twice a day. Researchers at the University of Guelph reported that dry matter intake increased 3.13 lbs. per cow per day and milk yield increased 4.3 lbs. per cow per day when feeding was increased from once to twice a day. There is a cost of labor to feed twice a day, and you should weigh the cost and benefits to determine if this is a possibility for your farm. You could also do a test run where you feed twice a day to see if a production response occurs, but you should give it at least 30 days to see a response. These are just some examples of short-term goals; sometimes it takes outside perspective to see some obvious changes that can make a difference.

Long-term goals take planning to put into place and help ensure the farm will last for the next generation. One of the most effective ways to reduce feed costs is to increase the proportion of home-grown forages. This process doesn't happen overnight and will take at least a growing season to put into place. There are many decisions with this choice such as acres to plant and hybrid choice. One of the first things to consider is acreage: Do you have enough to increase home-grown forages? If you do have enough acres, then consider hybrid selection. The brown midrib (BMR) corn silage hybrids have higher neutral detergent fiber digestibility (NDFd) but tend to have lower yields and higher seed cost. BMR may not be the answer to feeding the whole herd but could be targeted for high-producing cows. Researchers at the University of Nebraska reported that high-producing dairy cows had a greater response to high NDF digestibility corn silage than did low-producing dairy cows. This means that different corn silage hybrids can be grown for specific groups of cows.

During low milk prices it's time to evaluate your farm to identify areas that can be improved. It's important to define what measurements you plan to use and how they are calculated. Some useful measurements are pounds of solids shipped per cow per day and income over feed costs (IOFC) which can be easily tracked by programs such as Excel. Once you know areas for improvement than setting short and long terms goals will ensure that the farm can weather low milk prices and will be there for future generations.

— Mike Miller
mdmiller@whminer.com

EVALUATING WITH THE AVERAGE

One of the many tools nutritionists have in their toolbox is a forage/feedstuff analysis, providing a snapshot of the nutrient value which in turn allows the nutritionist to formulate a ration for the cows. This article will discuss utilizing a rolling average value of a feedstuff in a bunk to be more confident in what's being fed to the cows.

Using an average value for several different feed analyses has both positive and potentially negative attributes. Averages can be misleading at times, but if we recognize the potential pitfalls and use steps to account for them we'll be able to capture the true positive potential of a running average. By compiling several feedstuff analyses into an average value we can accomplish two things: First, we can feel more confident in our knowledge of the bunk: there is strength in numbers. Using repeated measures reduces the risk of an overreaction to a single test result. Second, we can utilize the running average to evaluate new feed analysis data. By compiling and continually updating the average, we can evaluate each new analysis and determine if the bunk or pile is changing. Dr. Weiss and Dr. St-Pierre thoroughly explain this in their article titled "Proper use of forage composition data for formulating diets for dairy cows". By calculating the standard deviation of a new feed analysis and comparing it to the running average analysis for the bunk we can begin to determine if the nutrient composition of the feedstuff is actually changing. They recommend taking several initial samples after the bunk is opened, average these values and update the average with each new analysis. They also recommend tracking how the average changes over time, a critical aspect of this practice. Using the average can help reduce the possibility that a bad sample, caused by poor sampling or an "uncharacteristic pocket" in the bunk, may elicit a ration formulation change when it isn't necessary.

One caveat is knowing how the bunk or pile was filled. If the silo was filled with each new truck load being added as a new layer over the entire pile, then this practice will be successful. If the bunk was packed using the progressive wedge method then the average should be used to track how the nutrient composition is changing over time.

The goal is to make decisions based on several data points and not a single analysis report that may not be the best fit for the silo. Another check will always be what the cows are telling us. If a sample analysis comes back drastically lower in starch or fiber content, but the cows are holding steady in performance, another sample should be taken of the feedstuff because a ration change may not be necessary. Using a running average has potential pitfalls but by taking steps to account for these, the positive attributes can be used to ultimately benefit the cows.

— Wyatt Smith
smith@whminer.com

CHEESE WITHOUT GUILT *Editorial comment*

A recent review by an investigative journalist of about 10,000 nutritional studies concluded that much of what people think they know about the relationship between diet and heart health is wrong, the result of the cherry-picking of data to support preconceived notions of what is and is not good for us. That these notions have been widely accepted as fact doesn't make them any less false. What we now know is that there's NO relationship between the consumption of saturated fats and heart disease, that eating foods high in cholesterol does NOT result in an increase in serum cholesterol, and that low-fat diets aren't all they're cracked up to be. The keys to weight gain or loss are calories (regardless of the source) and exercise.

This is essentially what my daughter, who has a B.S. degree in Exercise Science and Sports Medicine and is also a Registered Nurse, was saying more than 25 years ago as she talked to high school health classes. Genetics plays a much bigger role in serum cholesterol levels than what you eat. Which is why my daughter-in-law, who exercises regularly and seldom eats red meat or noshes on junk food, has very high cholesterol while her hubby eats whatever he wants and has a low cholesterol level.

What does this say about the recent trends toward soy milk, coconut milk, almond milk, and other non-dairy beverages? People will eat and drink what they choose, but there's no reason to expect that they'll be any healthier as a result. Milk does a body good!

— Ev Thomas

WHAT'S HAPPENING ON THE FARM

Coming back from the Northeast Dairy Producers Association (NEDPA) meeting, we were inspired to be more organized and intentional in employee training. We asked our veterinarian to help us put together a class on mastitis for our milking crew. This wasn't because we've had a recent mastitis outbreak but because things have been going well with the bulk tank somatic cell count below 100,000 — and we'd like to keep this going! We have several new people on our milking crew and thought it was a good opportunity to review mastitis protocols and prevention.

When a cow comes into the parlor with mastitis, it's the job of our milking crew to make a treatment decision: to treat or not to treat, and which antibiotic to use. This is a very important part of the job, so it's a good idea to periodically review our farm's mastitis protocol (we all know procedural drift is a real thing) and to help the milking crew understand the "why" and "how" behind mastitis. This equips them to make smart decisions for good cow health and responsible antibiotic use.

Dr. Nate came with some PowerPoint slides and a short biology lesson as we began the meeting, explaining some udder anatomy and how the body responds to trauma or infection. An explanation of inflammation and the cow's immune system helped us know why we track somatic cell count as an indicator of subclinical infection and why we want to keep that number low. We also learned that an increase in the white blood cell count in the milk (thus a high somatic cell count) is what causes the milk of an infected quarter to "gel up" on the CMT test.

He talked about the common mastitis causing bacteria — where they come from and how to prevent infection. And he showed us a diagram of what it looks like inside the udder when bacteria wall themselves off – a great visual of why in these cases antibiotics are largely ineffective and the cow is chronically infected.

We went over some guidelines for when to treat and when to let the cow go and just watch her. A protocol is good for helping make treatment decisions, but good cow sense is invaluable. Is she alert and bright, is she ruminating, did she produce her normal amount of milk, was the abnormal milk just in the first several squirts? Not every cow that comes in with a few flakes of mastitis needs to be treated with antibiotics… some cows will clear up the mastitis on their own. We also made a "Do not treat" list for those cows that we think are chronically infected and flare up every several months. Eventually these cows will get culled from the herd, but in the meantime antibiotics are probably not going to help clear up the infection.

It snowed into late April here in Chazy, but pretty soon warm weather will be here and we are hopeful even through the summer we can keep mastitis under control and our bulk tank somatic cell count low.

— *Anna Pape*
pape@whminer.com

TIMING, Continued from Page 1

need to target the upper end of this range to maximize cow productive response.

Greater NDF digestibility can really boost dry matter intake and milk production. Consider the example of a 1400-pound dairy cow eating a diet with a forage blend of 25% alfalfa (40% NDF) and 75% grass (55% NDF). When the 48-hour NDF digestibility of the grass is only 60%, then cows producing about 90 lb./day of milk can eat 52 lb/day of a diet containing just 54% forage. But, when the NDF digestibility increases to 76% because of earlier harvest, then the dietary forage percentage can increase to 63% while maintaining high feed intake and milk production.

Maturity at harvest has a large impact on forage quality, so be ready to take that first cut in a timely manner!

— *Rick Grant*
grant@whminer.com

TECHNOLOGICAL ADVANCES FOR FARMERS IN DEVELOPING NATIONS

Technology for a lot of us is a love-hate relationship. When it works, it's a very efficient way of communicating and enhances the quality of our lives. When it doesn't work, it can be quite a headache. Over the past 20 years technology has come a long way including in the dairy industry. Computer programs track each individual cow's health and production. Robotics are used on the farm for milking, feed push-up and calf feeding. Technology is even making its way into the hands of farmers in developing nations. It's basic technology that is making a world of difference for these farmers. The DigiFarm app was created to help farmers in developing nations access basic information that will let them determine if their cow has mastitis, and whether they can treat the problem themselves or need professional help. Kenyan farmers can rely on their devices rather than what someone told them years ago about mastitis. Small farmers are very poor and tend to wait until it's too late because they don't want to spend the money. When that happens, the cow ends up dying, which results in a loss of assets that they cannot afford in the long run. DigiFarm not only contains valuable information on livestock but also provides information on horticulture and growing crops. Farmers can access micro-loans and discounted inputs such as seed and fertilizer. Using this information farmers can increase the yields of their crops.

The majority of these farmers use cell phones with a 2G network. Remember when it took minutes to download a picture or a song? That was 2G. The technology behind the DigiFarm application is able to work with unsophisticated phones. It was launched last March by the phone network Safaricom, which then teamed up with Mercy Corp. Mercy Corp is a global non-governmental, humanitarian aid organization that assists areas that have undergone various forms of economic, environmental, social and political instabilities. One of the volunteers with Mercy Corp said that this technology is helping farmers understand what they need and providing a solution that helps them in the long run. The farms that they operate are very small and located in rural areas. Traditionally African farmers have been underserved by financial services and, despite being farmers, even by agricultural product companies. One of the biggest complaints by farmers is the poor quality of inputs, such as fertilizers and seed bags that are contaminated with cement and sawdust. Digifarm ensures that the inputs meet quality control standards. Digifarm has also partnered with a startup called iProcure, which is like Amazon for the Kenyan countryside, providing reliable deliveries. By having this technology, these small farmers can increase their harvest, be able to troubleshoot animal health, and overall provide a better life for themselves, their families and communities.

— Katie McMahon
mcmahon@whminer.com

The Heart's Delight Farm Heritage Exhibit is now open!

For more information, visit http://whminer.org/heritageexhibit.html

FARMING INTO THE FUTURE

In last month's *Farm Report* I shared a recently-published Journal of Dairy Science article (J. H. Britt et al. *Invited review*: Learning from the future ─ A vision for dairy farms and cows in 2067 J. Dairy Sci. 101:3722-3741) about a 50-year projection for the dairy industry. The article stated that annual milk production will need to nearly double by the year 2067 to meet the demands of a growing population coupled with the population's migration from rural to urban settings. Realizing that this increase in milk production will affect everyone from consumers to producers, I didn't want to leave the topic without addressing some of the crucial advances in knowledge and technology that will help our industry achieve the needed level of production.

Milk volume and solids produced will increase at an accelerated rate due to an improved accuracy of genomic selection for yield and health traits, and the modernization of dairy farms. There will be greater emphasis on genetic selection for yield of protein and fat rather than total milk volume. In addition, selection for health- and environment-related traits such as heat tolerance, immunity, disease resistance, reproduction, and metabolic robustness will allow for greater herd longevity and improved animal welfare. One genetic opportunity in particular that has global appeal is the development of cattle that are resistant to major infectious diseases such as foot and mouth disease and endemic diseases such as leptospirosis, infectious bovine rhinotracheitis, and bovine viral diarrhea. The authors of the article suggest that within the next 50 years, some of these diseases might be eliminated with the help of genomic selection. There is also the opportunity to select for residual feed intake, an estimate of efficiency of feed utilization on an individual animal basis which would improve efficiency of milk and meat production while simultaneously lowering methane production per unit of milk or meat. Of course, all of these genetic improvements cannot be fully realized without the additional improvements to the organization and management of dairy farms that allow for optimum animal health and welfare.

Dairy farms of the future will be larger and will become a more diversified enterprise, by not only focusing on dairy production, but also by raising dairy beef, where the lower genomic ranks in herds will be bred to beef bulls. Dairy beef will increase in importance because this method of production generates about one-third of the greenhouse gas emissions compared to traditional beef production. The increase in herd size will require dairy farms to ramp up their efficiency by utilizing sensors, robotics, and automation to improve herd management, comply with regulations, and reduce the farm's environmental footprint. In most developed countries, automation and robotics will reduce manual labor on the farm, with cows being milked by robotic systems, feed being loaded, mixed, and delivered by self-driving vehicles, and even energy, nutrients, and clean water being recovered from manure and wastewater through anaerobic digesters and osmotic filtration systems. In addition, housing facilities will be designed and constructed in a way that limits the restriction of natural behaviors, expression of estrus, and factors that contribute to lameness and other health problems that impair animal well-being. There will be a focus on increasing exercise areas and the cushion and comfort of alleys and walkways, in addition to providing a way for cows and calves to interact for an extended amount of time after birth.

In the grand scheme of things, dairying has been a part of livestock domestication for about 360 human generations, and the next 50 years comprise approximately two generations, so it seems unlikely that dairy farming as we know it will be completely displaced by 2067. However, the world faces a large challenge in feeding an expanding population with limited resources. It is more likely that the new technologies coupled with an increased knowledge of improving farm practices will strengthen the dairy industry in the years to come and keep it positioned to provide nutritious foods efficiently and sustainably.

─ Ashley Cate
cate@whminer.com

LOCAL TEAM EXCELS AT NORTH AMERICAN INTERCOLLEGIATE DAIRY CHALLENGE

The University of Vermont/ Vermont Technical College team, earned a Second Place Award at the 17th Annual North American Intercollegiate Dairy Challenge® (NAIDC) held April 12-14 in Visalia, CA. In total, 235 students from 38 colleges across the U.S. and Canada attended this educational event. These students are training for careers in the dairy industry as farmers, researchers, educators, financial analysts, nutritionists, farm service providers and veterinarians.

NORTH AMERICAN INTERCOLLEGIATE Dairy Challenge™ Tomorrow's Dairy Leaders

L-R: Ashley Cate, Wanda Emerich, Michelle Poulin, Julee Tellkamp, Sharon Palmer, Katelyn Williams, and Quinn Nelson.

The team from the University of Vermont/Vermont Technical College sponsored by the William H. Miner Agricultural Research Institute ranked second from a field of nine teams which evaluated the same dairy. The team included Michelle Poulin(student at Vermont Technical College, from Randolph, VT), Julee Tellkamp (student from Michigan State University, from Grant, MI), Sharon Palmer (student at University of Vermont from Weybridge, VT), and Quinn Nelson (student at Vermont Technical College from Derby, VT). The coach of the team was Wanda Emerich from Miner Institute in Chazy, NY.

Dairy Challenge® is an innovative three-day competition for students representing dairy science programs at North American universities. It enables students to apply theory and learning to a real-world dairy, while working as part of a four-person team. In its 17-year history, Dairy Challenge has helped train more than 6,400 students through the national contest, Dairy Challenge Academy and four regional contests conducted annually.

Collegiate participants visited six dairy farms in California, as part of their training to help farmers evaluate and adapt management to optimize success and animal care. Also, industry professionals presented cutting-edge research, new programs and career opportunities to students.

Each contest team received information from an area dairy, including production and farm management data. After an in-person inspection of the dairy, students interviewed the herd owners. Each team developed a farm analysis and recommendations for nutrition, reproduction, milking procedures, animal health, housing and financial management.

See **STUDENTS,** page 11

Miner Institute and The Alice T Miner Museum are teaming up to present a Centennial Summer Fair at Miner Institute on July 14!

Event Activities will include:

- Historical Exhibits
- Light Refreshments
- Equine Demonstration
- 1910s Dance Demonstration
- WWI-era Costume Contest
- Croquet and Lawn Games

The event will be a fundraiser for the United Way of the Adirondack Region.

STUDENTS, Continued from Page 10

"Dairy Challenge was a thrilling experience. Having the opportunity to see the dairy industry in California was incredible. Being able to utilize knowledge that we learned in the classroom and put it to use on a farm is one of the many things I enjoyed about Dairy Challenge. In retrospect, I really enjoyed the limited amount of time to evaluate the dairy because it gave my team a chance to make observations and recommendations in a real world setting. My favorite part of Dairy Challenge was working with my teammates to present opportunities for the producer to pursue," said team member Julee Tellkamp.

Sharon Palmer further described the contest as "a unique opportunity to meet students and industry representatives from all over the country while utilizing our knowledge, teamwork, and presentation skills to create suggestions to improve the profitability, efficiency, and cow comfort of dairy farms."

The event culminated with team members presenting recommendations and then fielding questions from a panel of judges. These official judges included dairy producers and industry experts in dairy finances, reproduction, nutrition and animal health. Presentations were evaluated for accuracy of analysis and recommendations, with awards presented at a final banquet.

The Social Media group was aided by two additional representatives from Miner Institute, Ashley Cate and Katelyn Williams. They photographed the three-day event and posted updates to a variety of social media venues.

Team member Michelle Poulin shared that the contest is "a chance to interact with every aspect of the dairy industry while also learning teamwork, leadership and public speaking skills to ensure that the farm my team evaluated for Dairy Challenge as well as any farm that my teammates and I have the pleasure of working on in the future, is profitable, efficient, environmentally sustainable, cow health and longevity are preserved all while providing consumers with the highest quality products available."

North American Intercollegiate Dairy Challenge was established as a management contest to incorporate all phases of a specific dairy business. Its mission is to develop tomorrow's dairy leaders and enhance progress of the dairy industry, by providing education, communication and networking among students, producers, and agribusiness and university personnel. NAIDC is supported completely through generous donations by more than 100 agribusinesses and dairy producers, and programs are coordinated by a volunteer board of directors.

For more information, visit www.dairychallenge.org or www.facebook.com/DairyChallenge.

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

Change Service Requested

Non-Profit Organization
U.S. POSTAGE PAID
Chazy N.Y. 12921
Permit No. 8

YOUR MAY FARM REPORT IS HERE ENJOY!

The 4-H Milk Dippers club recently visited Miner Institute to learn about the feeds that we provide for our dairy cows.

Closing Comment

When you don't know what you are doing, do it neatly.

www.whminer.org
518.846.7121 Office
518.846.8445 Fax