Earlier this year I had the opportunity to participate in a round table discussion at the Catskill Regional Agriculture Conference in Delhi, NY put on by Cornell Cooperative Extension. The topic of discussion was three-fold: 1) How is the world of agriculture changing? 2) What does the future hold for farmers and farming? and 3) Will the dairy farmer have a voice for reasonable management as future regulations and requirements unfold? With a room full of dairy farmers and a smattering of agribusiness, the panel comprised veterinary, management, and Extension expertise.

When we look to the future, every crystal ball is bound to be a little murky, but here are a few of the messages that emerged.

The landscape stretching before dairy farmers is dotted with programs that promise greater scrutiny and regulation, some likely for the better and some perhaps for worse: FARM program, Veterinary Feed Directive, consumer expectations, milk processor and retailer expectations, and environmental regulations, to name only a few. As of January 1st the latest version of the FARM animal care program requires a veterinary-client-patient relationship, annual training on care and ethics, and documentation that the training is actually happening. Importantly, it mandates corrective action and loss of milk market if farms fail to meet the requirements of the program. The FARM program now has teeth, and the question on many farmers’ minds is – will future welfare regulations help them or bite them?

Society is much more engaged and interested in food production, environmental regulations are getting tougher, and animal welfare is becoming more regulated. As milk production costs rise, competition is increasing both domestically and globally. It’s safe to predict that there will be a new, added cost of dairy production, with many dairy farmers perceiving a marketplace driven by consumer demands and food corporations chasing sales and profits.

As I prepared some of my thoughts for the discussion I reviewed notes I had taken at a panel discussion at last September’s Vermont Feed Dealers and Manufacturer’s Annual Conference on future challenges facing dairy farmers. Basic challenges will remain: 1) forage quality will always be of paramount concern – the primary driver of herd...
A FARMER'S PERSPECTIVE ON GMOs

— Jon Greenwood, owner of Greenwood Dairy Farm in Canton, NY.

*Editor’s note: Jon presented his thoughts as part of a panel discussion on GMO technology at the Annual Conference of the Northeast Agribusiness and Feed Alliance held in February in Albany, NY. Rick Grant heard it and felt that it would be perfect for the Farm Report readership to hear a farmer’s perspective on this topic.

I want to talk a bit about how I started farming because I think it helps explain how I got here and why I think the way I do. I didn’t grow up on a dairy farm. After high school I worked on my grandparent’s farm in Wisconsin for a year milking 12 Guernseys. I then attended college, graduating from what was Canton Ag and Tech at the time, and working on the farm I currently own to put myself though college. In 1978 the owner financed me and I started with 70 cows, no young stock, and 120 acres of tillable land. Today, we milk 1400 cows and crop 3500 acres.

As I was getting started I turned to anyone who could give me advice. An older salesman who I had relied on for advice stopped by and told me, “I was told I shouldn’t stop here anymore since you aren’t buying from us. But, I just want to let you know you are going to make it.” I replied, “What do you mean?” He said, “I’ve seen a lot of young farmers start out. They want to farm the way Dad did. You don’t know how you were supposed to do things so you’re not afraid to try new things.” His remark has always stuck with me.

My goal in farming was to take care of my animals and they would take care of me, and the same with our land. On our farm we always want to do better; average is not our goal. So I read a lot, attended meetings, and learned all I could. I’ve never been afraid to try new things. Some things worked, some didn’t. But our goal was always to be more efficient, take better care of our cows, and constantly improve the land we use.

To do that we’ve adopted or tried new ways of doing things. BST, BT corn, reduced lignin alfalfa, Roundup Ready corn, no till + reduced tillage, tile drainage, land shaping, GPS on tractors, yield monitors on the chopper, cooling in the barns, activity and ruminant monitoring, a digester and more. My point is that I’m not afraid of technology or change. It has made us better farmers and better caretakers of the animals and land. It has allowed our cows to produce more milk per cow, more milk from the feed they consume, more tons of usable forage from an acre of land. That allows our cows and land to produce more, using fewer resources to produce a better, safer product than when I started.

So, let’s get to today’s topic: GMO crops. If I stop using GMO crops I’ll have to buy corn seed that doesn’t give me protection from corn borer, rootworm and other pests, forcing me to buy pesticides which must be applied, causing greater risk to the environment and my employees. I’ll lose the option of using Roundup, one of the safest herbicides both in environmental terms and for employees and animals. It will make no till less attractive, thereby increasing the use of tillage and the burning of fossil fuel. My crop yields, digestibility, and drought tolerance will all go down. I will lose production and have a greater negative impact on the environment. My cows will not have as nutritious a meal. The risk for mycotoxins would go up.

The use of cover crops will become more difficult, resulting in the potential for greater soil, nutrient, and herbicide loss. My costs will go up: savings on seed, but less choice, more chemicals, more tillage, more acres for the same pounds of less digestible forage and less milk per cow. This increase in the cost of production will mean our products will not be as competitive on the world market. Because of our high cost of doing business, especially in states like New York, our advantage is the early adoption and use of new technology. The consumers that are the most in need will see an even greater share of their limited resources go to food.

GM crops allow farmers to have higher yields. In 2012 it was estimated that to maintain production levels globally we would have needed 37 million more acres devoted to crops. Roughly 90% of the corn, soybeans and cotton acres in the U.S. are using GMO seed. The use of GMO crops allows greater use of no-till which can help reduce soil erosion, leading to a decrease in sedimentation and the loss of nutrients such as nitrogen and phosphorous, a growing environmental concern.

Finally, why are we talking about GMOs? Because a company is looking for a market advantage and is playing on misinformation and the unfounded fears of the consumer. Why not a slogan that our milk is sourced from farms who have pledged to provide the best care of both the animals and land in their care, by using the latest technologies to reduce land use, fossil fuel use, and chemical use, to provide their cows and our customers the most nutritious and safest products on the market?

GMOs allow farmers to grow more crops in more places using less land and fewer chemicals with less tillage, thereby decreasing soil erosion, reducing herbicide runoff, and reducing greenhouse gases and costs. Sounds like sustainability to me.

If we turn our back on technology, we are taking a giant step back and doing a disservice to all mankind.
WHAT'S HAPPENING ON THE FARM

My name is Victoria Vendetta and I’m the new year-long dairy intern. I graduated in 2016 from the University of Connecticut with a Bachelor’s degree in Animal Science and a minor in Dairy Management. I grew up in a rural town in northern Connecticut, always involved with the care and training of horses. In 2010 I began working as a veterinary technician for a local vet clinic, and my love for veterinary medicine blossomed. Throughout the past 7 years I’ve been a technician for two different hospitals, one small animal and one mixed animal practice.

While working I also attended UConn as a pre-veterinary student. However, as I got involved with the dairy cattle on campus, it soon became clear that dairy was my passion. I was in awe of what metabolic marvels cows are; how they can turn feed into milk, the most wholesome, nutritious food product. This led me to pursue Dairy Management. I also lived at my university’s dairy, working in return for housing. While milking, feeding calves, giving shots, and delivering calves among other tasks, I fell in love with the lifestyle of hard work and long hours, and gained an even larger appreciation for dairy producers. They work tirelessly every day, taking pride in making sure their animals are comfortable, healthy, and producing a safe and nutritious product for the public. I knew that this was an industry I wanted to be a part of for the rest of my life.

Throughout college, Dairy Challenge played a major role in my education. I attended 4 Northeast Regionals, 1 National, and 1 Academy. In 2013, Regionals were hosted at The Miner Institute, and as soon as I got here I knew I needed to come back! In 2016 I spent my spring semester at Miner Institute as an Advanced Dairy Management student, and now one year later I’m back again. I truly consider this place my home!

After a few weeks I’ve already learned so much from the wonderful farm staff. I’m excited to have the opportunity to continue to develop my herd health and management skills which I’ll be able to take with me as I find a job as a herdsman and further pursue a career as a large animal veterinarian.

— Victoria Vendetta
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NEW FEATURE! ... DID YOU KNOW?

At the end of each year we like to pull together some numbers to reflect on how we did and to set goals for the coming year. We thought we would take the opportunity to share some interesting facts about Miner Institute with you.

In 2016, our staff fed 11,200 tons of TMR to our dairy herd, which resulted in more than 12 million pounds of milk and more than six million gallons of manure spread on Miner Institute's fields!

In 2016, 168 articles were written for the Farm Report, many of which were re-printed in other dairy newsletters.

In 2016, 50,000 milk samples were processed in our milk lab and 400 cows per week were blood sampled. Additionally, more than 860 hours were spent by our research team on cow watch.

In 2016, 5,200 bales of hay were unloaded into the hay loft of our historic barn to feed our herd of Morgan horses!

Big kudos to all of the hard-working staff at Miner Institute!

Learn more about Miner Institute's Morgan Horses
Visit whminer.org/equine.html
HELPING CALVES BEAT THE HEAT

Have you ever noticed that during extremely hot temperatures your calves don’t want to drink all their milk? This has been observed during previous calf studies at Miner Institute, so this past summer we conducted a study funded by a grant from the farmer-driven Northern New York Agricultural Development Program to determine if supplementing fat to milk replacer, while still feeding the same volume, would give calves the extra energy they needed to regulate their body temperature when ambient temperatures were outside the calves’ thermoneutral zone (78°F). This way we’d be feeding calves a more energy-dense diet without trying to get them to consume a larger quantity of milk replacer. This is important because when temperatures exceed the thermoneutral zone calves must use additional energy above their normal maintenance requirements to thermoregulate, therefore decreasing the amount of energy available for growth.

Sixty Holstein calves (27 heifers and 33 bulls) housed in individual hutches were assigned randomly to one of three treatments as they were born, based on sex and birth date.

1) milk replacer with no added fat (CON),
2) milk replacer with added fat only when daily temperature exceeded 78°F (F-TEMP),
3) milk replacer with added fat for all study days (F-ALL).

Calves were fed the same amount of milk replacer (26% crude protein, 18% fat, and 13% solids) twice daily following a step-up/step-down feeding strategy from 2 to 57 days of age, with the weaning process starting on day 44. An animal fat product (Milk Energizer) was added at 1.2% of total reconstituted milk replacer for F-TEMP and F-ALL, increasing solids to 14.2%. When Milk Energizer was added to the milk replacer the calculated as-fed protein: fat ratio became 24:21. Calves had ad libitum access to a pelleted starter and water throughout the study.

You may not remember this past summer as being exceptionally hot. Although temperatures didn’t seem extremely hot for long periods of time, we still supplemented fat 73 of 122 days in the F-TEMP treatment because the temperature was above 78°F. Average temperature during the study (June 7 to Oct. 7, 2016) was 66.4°F ranging from 31.8 to 89.2°F. Average daily gains during the preweaning period (2 to 43 days of age) were greater for fat supplementation (FS = F-TEMP + F-ALL) compared to CON but average daily gain (ADG) overall (2 to 57 days of age) were similar among treatments. Hip height and hip width change was similar among treatments, so although the FS calves ate more they did not increase in ADG proportionally.

The results of this study indicate that calves did not benefit from being fed supplemental fat during the summer months. Many producers in Northern New York commonly feed a 23% CP/22% fat milk replacer during the winter months and many continue to feed it during the summer. Based on the results of this study, producers should consider feeding a lower fat milk replacer to maximize feed efficiency and lean growth in their calves during the summer months. In addition, the impact of heat stress on calves at all stages of development should be considered and farmers should evaluate their calf management program to determine the impact summer heat stress may have on animal performance and well-being.

— Kayla Hultquist
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Farmers in Iowa are breathing a sigh of relief after the Iowa Supreme Court dismissed the lawsuit brought by the Des Moines Water Works (DMWW) in 2015. The lawsuit alleged that three northern Iowa drainage districts were responsible for high nitrate concentrations in the Des Moines and Raccoon rivers. The DMWW case claimed that tile drains in these districts were the primary reason for high nitrate concentrations and asked for damages to help offset the high costs of removing nitrate from the river to maintain levels below USEPA’s drinking water standard of 10 parts per million of nitrate-N. According to DMWW, they spent $1.5 million to remove nitrate from river water in 2016 and need to invest another $80 million in nitrate removal technology. DMWW provides drinking water for about 5 million people in the Des Moines region.

As part of the lawsuit, DMWW claimed that tile drains were a point source of pollution, similar to waste water treatment plants. However, agricultural runoff has long been considered exempt with respect to the Clean Water Act and is designated as a nonpoint source of pollution. Attorneys representing the drainage districts contended that <1% of the nitrate load in the rivers came from the districts. Recently, the Iowa Supreme Court ruled that the drainage districts could not be held liable for damages because they lack the policing power like counties or other political subdivisions. They stated that the issue should be decided by legislators, not by the court.

State legislators will decide the fate of DMWW. There is currently pending legislation that would essentially remove DMWW and other private water works entities, moving the responsibility to local government and city councils. With passage of this legislation, DMWW’s lawsuit would effectively disappear entirely.

According to some, this ruling puts more pressure on the state to reduce nitrate levels in streams. The Iowa Nutrient Reduction Strategy (introduced in 2013) is a collaborative effort among university, state, local governments and agricultural producers to adopt best management practices to reduce nitrate losses. These include planting cover crops, using buffer strips, and employing end-of-tile treatments such as denitrifying bioreactors. The goal is to reduce nitrogen and phosphorus loading to the Gulf of Mexico by 45%. Critics cite its lack of a specific timeline and funding to get practices on the ground, and are leery of the fact that it is voluntary.

While the issue of liability for drainage districts has been resolved, there wasn’t a ruling on designating tile drains as a point source of pollution. This decision is scheduled to go to court at the end of June 2017. While happy with the Supreme Court’s decision, pro-agricultural groups are still concerned over the ruling on tile drains.

Private agricultural industries have stepped up funding efforts for conservation practices and have raised $48 million. While farmers are relieved, increased pressure to adopt practices to reduce nitrate losses will remain a big push in Iowa and other Midwestern states.

— Eric Young
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2017 DAIRY NUTRITION SHORTCOURSE

The Dairy Nutrition Shortcourse will be conducted at Miner Institute in Chazy, NY on June 5 - 8. This shortcourse is designed primarily for early career nutritionists and allied industry professionals seeking a more comprehensive foundation in the principles of dairy cattle nutrition and their application within dairy herd management. The course blends classroom-based instruction with practical skill development along with networking opportunities for attendees with each other and with course faculty in informal settings. Course registration will open in April 2017.

General and Registration Questions:
Heather Darrow, Cornell University
Phone: (607) 255-4478
Email: hh96@cornell.edu

Questions on course content:
Dr. Tom Overton, Cornell University
Phone: (607) 255-2878
Email: tro2@cornell.edu
SOYBEAN VARIETY SELECTION & NITROGEN CONTRIBUTION

**Variety selection** — Each year seed companies are releasing new (and probably better) soybean varieties. Cornell University no longer runs soybean variety trials so you’ll need to use other sources to guide variety selection. These include trusted seed dealers but also soybean-growing farmers in your area. Relying on farmer experience puts you at least a year behind what the seed companies are doing, but if your neighbor has had good results with a particular variety it may be worth considering for at least part of your soybean acreage.

Don’t get greedy about pushing maturity to the limit (and beyond); you have a lot more to lose by planting a soybean variety that’s too late for your area than by planting one that’s slightly early. During many years of reviewing the results of the Cornell soybean trials in Northern NY, I was impressed at how well the early varieties yielded compared to the ones in the next later maturity group.

**Nitrogen contribution to the following corn crop** — A popular rule of thumb is that one bushel of soybean yield contributes one pound of N to the following year’s corn crop. However, research results vary widely on a soybean crop’s N contribution, from 0 to 288 lbs. According to Iowa State University agronomists, the amount of N removed from the soil by soybean grain exceeds that provided by soybean residue. They also found that soybean yield had little impact on the amount of residual N. It’s likely that a thin stand of grass or alfalfa-grass contributes more N to a first-year corn crop than does a bin-busting yield of soybeans. Soybeans are not a soil-improving crop; corn roots have a more positive impact on soil structure. This doesn’t suggest that corn improves soil structure; to maintain and/or improve soil health you should include grass or alfalfa-grass in the rotation.

While there doesn’t appear to be any relationship between soybean yield and the amount of N credited to the corn crop, it seems reasonable to assume a contribution of 20-30 lbs of N from a soybean crop to first-year corn. And there’s no N credit from soybean stubble to second and later years of corn.

— Ev Thomas
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ORGANIC MILK: NORTHEASTERN U.S. SITUATION

In the past year U.S. sales of organic milk products increased by 6% while organic whole milk product sales were even stronger, up 16%. That’s the good news; the bad news is that during 2016 payments to organic milk producers in the Northeastern U.S. declined by $2.00 per hundredweight. Regional organic milk producer reps say that the major handlers of organic milk are either not taking on new farms or have slowed considerably. Even with the significant increase in sales, in recent months there’s been a surplus of organic milk on the market, resulting in bargain prices for consumers. This doesn’t appear to be good news for farmers in the process of “transitioning” to organic milk production. As previously mentioned, before transitioning to organic milk production a farmer should make sure there’s a reliable market for this milk, and at a price that would make organic production profitable.

The other factor affecting current and future economics is the strong demand for organic grains, which already exceed the supply. At least in the next few years the demand-supply situation for organic grains will probably get worse: Prices for organic grains have been increasing, suggesting that this may be another way to profit from the increasing popularity of organic foodstuffs.

— E.T.

Is there something you would like to know more about?

Send Farm Report article suggestions to Rachel at dutil@whminer.com
ARE YOU PREPARED?

As I watched the news of the wildfires in the Panhandle of Texas, Oklahoma, Colorado and Kansas it made me think of emergency planning. Mother Nature can throw the book at us when we least expect it. There are 440,000 acres burned by the wildfire in the panhandle of Texas and significant numbers of cattle were injured or killed. Along with the loss of livestock and property, several people have lost their lives trying to protect cattle from the fires. I am proud of how the agricultural community has come together to help those farmers and ranchers rebuild and feed and care for the remaining cattle. They have donated thousands of bales of hay to feed the remaining cattle along with donation centers receiving fencing supplies, bottled water, and other supplies needed. May our thoughts and prayers be with people affected by the wildfires.

Do you have an emergency preparedness plan for winter storms, barn fire, and the countless other scenarios that could occur? If not, those plans should start taking place. Planning for unexpected scenarios and putting these plans into action can pay off when they do occur. There are programs through Cornell University Cooperative Extension to help get ready and make an emergency preparedness plan. The Farm Disaster Preparation Certificate is to help farmers prepare and plan for disasters (http://eden.cce.cornell.edu/fdpcert/Pages/default.aspx). The class is 6 hours long and will cover most common disasters experienced by farmers.

As dairy farmers we need to have power, water, feed, and shelter for our animals and employees during a disaster. A generator that will run the parlor and barn is vital for such a scenario. Another important aspect to consider is maintenance on the generator so it works when it’s needed, whether that’s once a month running it for an hour or following the manufacturer’s guidelines for maintenance. When a disaster or emergency occurs you may not be there. Training your employees on their roles in an emergency preparedness plan is important for the success of your plan. If your farm hasn’t started planning for the unexpected disaster then now is the time to start. Utilize the resources from extension and involve essential employees in the process. It will make a disaster less stressful and hopefully prevent loss of property or life.

— Michael Miller
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HOME AGAIN

The Bride and I are back home at Oak Point, about a mile across the St. Lawrence River from Ontario. The ice left in February, the earliest anyone can remember, then with the return to cold weather it returned in mid-March. I know it’s time to leave Virginia when I catch myself saying “You-all” and start to think that ham and biscuits are an essential part of church activities.

I’m a very lucky guy, have seen a lot of the world while on crop consulting trips, and mostly on someone else’s dime. I’ve seen Big Ben in London; the Festival San Marcos in Aguascalientes Mexico; used “the loo with a view” at the beach on Australia’s Sunshine Coast; sampled the suds in Frankfort Germany; walked a mile or two on the Great Wall of China; rode the bullet train in Japan; had lunch in the New Zealand town where “The Lord of the Rings” was filmed; dined in a 15th century castle in Lisbon, Portugal; and watched the Saturday night opera scene in Budapest when Hungary was still a Soviet republic. It’s been great fun but it sure is nice to be back in “cow country”, where dairy farming is a major enterprise. And where you can safely drink the water.

— E.T.
We continue to learn how to use fatty acid metrics based on bulk tank milk

Over the last year farmers in the St. Albans Cooperative Creamery have received daily bulk tank reports containing milk composition for payment along with fatty acid metrics. The fatty acid metrics (ie DEN, MIX, and PREF) are milk fatty acids that are grouped based on their source and chain length. The de novo fatty acids (DEN) and a portion of the mixed origin fatty acids (MIX) 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 (PREF) come from fat in the feed consumed and the mobilization of body fat especially in early lactation. In general, increases in de novo fatty acids and mixed fatty acids are related to increases in milk fat and milk protein.

For the last year DEN, MIX, and PREF were reported as a relative percentage of the total fatty acids in milk fat, meaning that they added up to 100%. Starting in mid-February 2017, the DEN, MIX, and PREF are now reported as g/100 g of milk. This means the fatty acid metrics will now add up to ~95% of the milk fat value since milk fat contains ~5% glycerol. The change in how the metrics are expressed was in response to field experience gained over the last year. The g/100 g of milk unit of expression explains the relationship to changing milk fat and protein better than relative percent.

A new fatty acid metric (DBOND) was added to the report in mid-February 2017. DBOND is an index of the milk fatty acid unsaturation which is the average number of double bonds in the fatty acids and is related to milk fat depression. Field experience shows that as the unsaturation of milk fatty acids increases the milk fat percentage decreases. The suggested alarm level is ~≥0.31 double bonds per fatty acid.

From field experience, observational studies, and controlled research it’s clear that milk fatty acids are related to management practices and nutrition.

In general, St. Albans Coop herds with higher de novo fatty acids have higher milk fat and protein percentages than herds with lower de novo fatty acids. The herds with higher de novo fatty acids are 10 times more likely to provide ≥18 inches of bunk space per cow and 5 times more likely to stock stalls at ≤110%. The higher de novo herds also make sure cows have adequate feed available by feeding more often and feeding diets with adequate physically effective fiber and lower fat.

There are two ways that farmers and their consultants are effectively using the “typically reported composition values” and the fatty acid metrics that are provided on the daily report. The first is to use them as a snapshot by looking at the most recent day or days and determine if there are any “alarms”. The alarms indicate an opportunity to improve milk fat, protein, or both through diet or management changes. The second way to use the milk fatty acid metrics is to look for trends over time. The metrics can indicate rather quickly that an unexpected change occurred or indicate the response to a planned change. In general, de novo fatty acids increase in response to improved rumen function or

See FATTY ACIDS, Page 10
The great majority of nutrients are taken up by the plant’s root system. Foliar applications can be useful but almost exclusively for trace nutrients since the plant can only absorb a small amount of nutrient from its leaves and stems. Root uptake is via the soil solution because as an agronomist said many years ago, “plants ain’t got teeth”. However, how much of each nutrient is plant-available depends on several factors including soil pH, the amount of nutrient, the amount of other nutrients in the soil, soil moisture status, and the health of the plant’s root system.

Some people assume that manure nutrients are available to plants vs. the nutrients in commercial fertilizers.

Fertilizer Facts and Fancy

The great majority of nutrients are taken up by the plant’s root system. Foliar applications can be useful but almost exclusively for trace nutrients since the plant can only absorb a small amount of nutrient from its leaves and stems. Root uptake is via the soil solution because as an agronomist said many years ago, “plants ain’t got teeth”. However, how much of each nutrient is plant-available depends on several factors including soil pH, the amount of nutrient, the amount of other nutrients in the soil, soil moisture status, and the health of the plant’s root system.

Some people assume that manure nutrients are available to plants vs. the nutrients in commercial fertilizers. This just isn’t true, especially for potassium. Research in Quebec found that the potassium in manure is more plant-available than the potassium in a commercial fertilizer such as muriate of potash. Manure is a great source of major, secondary and minor nutrients, which is why I call it a “multivitamin for plants”. Dairy manure is close to neutral in pH, so supplying nitrogen as manure is much less acidifying to the soil than an equivalent amount of N as urea, UAN or ammonium sulfate. There’s still need for commercial sources of N on most farms, but it makes both practical and economic sense to rely on manure to the greatest extent possible, supplementing with N fertilizer as needed.

I worked for Cornell Cooperative Extension in Northeastern NY for 15 years, which included making lime and fertilizer recommendations for literally thousands of soil analyses by Cornell University’s soil test lab. Cornell would mail the results to the Extension educator for that county, and he or she would either make fertilizer recommendations based on the results or simply forward them to the farmer (since the analysis included basic nutrient recommendations). I always wrote out detailed fertilizer recommendations for each field, tailored to the individual situation if I knew the farmer — and I knew most of them. I assumed that top crop managers could benefit from 25% more N on their corn, and the soil fertility specialist at Cornell agreed. Where we used to disagree was on potassium rates for alfalfa: I’ve always been liberal on fertilizing alfalfa, especially where there’s a good crop and soil test K is medium or less. An extra 100-200 lbs/acre of 0-0-60 seems like cheap insurance, especially since a soil sample is a composite of soil cores so some areas in a field are higher and some lower in fertility than the soil analysis. I became enough of an irritant (hard to believe, eh?) that Cornell did a trial in its research plot area at Miner Institute, using a three-year old stand of alfalfa on a soil with low soil test K. We compared the university’s potassium recommendation of 160 lbs/acre to a rate twice that high. Guess who won? ☺

If you do pre-ensiling forage analysis of fresh alfalfa and alfalfa-grass (especially “wet chemistry” analyses), check the potassium concentration. Average K for alfalfa is about 2.5%; any field producing alfalfa that’s 2.0% or less should be soil tested immediately — especially if you plan on keeping the stand for another year.

— Ev Thomas
ethomas@oakpointny.com

FUTURE, Continued from Page 1

profitability remains forage management ability, and 2) individualized cow comfort will be critically important whether in a free stall, tie stall, or robot system. Increasingly, societal views will be the final test of whether or not a particular production practice continues. The answer to the question “what does the consumer want?” will only grow in importance in the coming years, like it or not.

The successful farm of the future will fuel its cows on high quality forages, will ensure cow comfort, and will find a way to be socially acceptable – especially with Millennials. Their focus on smart phones and social media will undoubtedly drive (in fact is driving) marketing and expectations of the companies and coops purchasing milk. One panelist, in the wrap-up of the discussion, posed the million-dollar question, in my opinion: “How does a farmer implement new practices in a society that is increasingly agriculturally and scientifically illiterate?”

And here is the nub of the challenge facing our industry. There is no doubt that we will need new technologies and scientific advances to meet the challenges of global climate change, shifting global trade and economics, and greater societal expectations for environmental and social sustainability. We must find a way to build trust and convince consumers that technology – in all its forms – will be necessary to ensure a dairy industry that endures and is capable of feeding our U.S. population and contributing substantially to global food security.

— Rick Grant
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YOU AIN’T SEEN NOTHIN’ YET

In recent years there have been some remarkable advances in plant genetics, including drought-resistant corn hybrids and reduced-lignin alfalfa varieties. But as the saying goes, “You ain’t seen nothin’ yet”. New gene-editing tools promise faster, more precise improvements to plants. The best-known of these is CRISPR, the acronym for Clustered Regularly Interspaced Short Palindromic Repeats (we knew you wanted to know). A variant of CRISPR, CRISPR-Cas9 uses RNA to go inside plant cells to target one specific area. This is called “gene editing”, but CRISPR editing alters the plant without bringing in foreign DNA. Thus far USDA has not considered that the altered plant has to be regulated as a GMO: This was the case when Penn State plant pathologists “switched off” the trait in white button mushrooms that causes them (the mushrooms, not the pathologists) to turn brown when exposed to light. Nor is CRISPR technology exclusive to plants; scientists are now working on developing a line of hogs that are genetically resistant to a currently untreatable virus. Because the genes are “edited” instead of imported it’s hoped that this would be well-received by the general public.

That said, you can expect the anti-GMO crowd to have heart palpitations about what they see as yet another attempt at “messing with Mother Nature”, but as with most GMOs it’s likely that CRISPR technology will eventually be accepted by most consumers. This may be helped because this gene-editing technology has the potential for widespread medical uses, even though routine use for this purpose is probably many years away. However, CRISPR use in crop genetics is much less controversial — and it’s already here.

— E.T.

FATTY ACIDS, Continued from Page 8

feed quality. Mixed fatty acids increase in response to increased synthesis in the udder or increased dietary fat. Preformed fatty acids increase in response to body fat mobilization or increased dietary fat.

A critical part of evaluating changes overtime is knowing a farm’s typical variation. A spreadsheet program like Excel can make this easy by calculating the mean and standard deviation of milk fat and the fatty acid metrics from daily bulk tank values for a defined period of time. The daily values, mean, and a standard deviation can be plotted to form a “control process chart”. The goal is to look for values outside the normal limits or systematic patterns within the limits that suggest a change has or is occurring. The limits will be set by the farmer or consultant based on their willingness to accept variation. For example, the limits might be the mean ± 2 times the standard deviation. The ± X times the standard deviation can be changed. Typically, total fat is the most variable component of bulk tank milk.

The figure at left shows the mean (dotted lines) for the fatty acid groups over 1 month period. The mean ± 2 standard deviations is shown by the solid lines for preformed fatty acids. The black oval indicates values have exceeded the normal limits. In this situation, the values outside of the limits were a result of a planned dietary change.

— Heather Dann
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Join us for an Ag in Society talk
Thursday, April 20 at 7 pm

Joseph C. Burke Education and Research Center (BERC) at Miner Institute
586 Ridge Rd. Chazy, NY

Agriculture Myths and Facts with Dr. Joe Schwarcz

At Miner Institute, we feel that we must engage the farm and non-farm community alike on issues that cross-cut agriculture and society: food safety and security, environmental impacts of farming, animal well-being, and sustainability of our food production systems — regionally and globally.

The Agriculture in Society Speaker Series is one of our major efforts to bring science-based information to the community.

Dr. Joe Schwarcz is Director of McGill University’s “Office for Science and Society.” He is well known for his informative and entertaining public lectures on topics ranging from the chemistry of love to the science of aging. Professor Schwarcz has received numerous awards for teaching chemistry and for interpreting science for the public and is the only non-American ever to win the American Chemical Society’s prestigious Grady-Stack Award for demystifying chemistry. He hosts “The Dr. Joe Show” on Montreal's CJAD and has appeared hundreds of times on The Discovery Channel, CTV, CBC, TV Ontario and Global Television. Dr. Schwarcz also writes a newspaper column entitled “The Right Chemistry” and has authored a number of books, “Radar, Hula Hoops and Playful Pigs,” “The Genie in the Bottle,” “That's The Way The Cookie Crumbles,” “Dr. Joe And What You Didn’t Know,” “The Fly In The Ointment” “Let Them Eat Flax” “An Apple A Day,” “Brain Fuel,” “Science, Sense and Nonsense,” “Dr. Joe’s Brain Sparks,” “Dr. Joe’s Health Lab,” “The Right Chemistry,” “Is That a Fact and his latest, released in 2015 is “Monkeys, Myths and Molecules.” He is also an amateur conjurer and often spices up his presentations with a little magic. Dr. Schwarcz was awarded the 2010 “Montreal Medal” which is the Canadian Chemical Institute’s premier prize recognizing lifetime contributions to chemistry in Canada. In 2015 he was named winner of the Balles Prize for critical thinking by the US based Committee for Skeptical Inquiry.
Dairy Outreach Coordinator Wanda Emerich discusses how the forage bins allow our research staff to feed different diets to a group of cows. The students were visiting recently from Chateaugay Central School.

Closing Comment

If all you have is a hammer everything looks like a nail.