

FARM REPORT



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FROM THE PRESIDENT’S DESK: RUBBED THE RIGHT WAY?

A recent paper on the positive effects of human contact with dairy cows provides a fascinating insight into basic bovine behavior (Appl. Anim. Behav. Sci. 2018. 204:23-28). The basic question was how cows with different personalities perceive direct human contact such as stroking or grooming. Understanding how cows perceive their human caretakers is fundamental to enhancing the human-cow relationship. Previous research has amply demonstrated the benefits of a positive relationship such as more milk: from 3.5 to 10% depending on the study.

In this recent study the researchers focused particularly on the effect of stroking on the ventral side (i.e., the underside) of her neck for cows that had either a calm or more excitable temperament or personality. Over time, they wondered if purposeful, positive, and calming interactions with the cow would reduce avoidance behavior.

The cows received the tactile stimulation by stroking the ventral part of the neck at the milking parlor for 5 minutes per day for 15 consecutive days. Each cow’s personality was assessed as being a high responder (more excitable and likely to get out of Dodge, so to speak, in a stressful situation) or a low responder (calmer, less excitable) based on the time that it took to exit a weigh scale under controlled conditions. Avoidance

behavior of cows at the feed bunk was measured before and after the regimen of tactile stimulation. Essentially, a person walked slowly toward the cow as she was eating, and the distance was measured when she responded by backing up or turning her head away.

Increasingly, research indicates that desirable dairy cow welfare involves the nurturing of positive emotional states and not simply avoiding negative states. For dairy farms, milking happens multiple times daily and the cow is near humans. Stroking – though seemingly trivial – could have substantial impacts on the cow’s well-being.

I’m not entirely sure that spending 5 minutes daily engaged in active grooming or stroking of the cow is practical; probably not. But I wonder if there is benefit from any amount of it? Positive effects of human stroking in areas of frequent social grooming among cows such as the neck region include reduced heart rate, neck stretching toward the groomer, and less agitation. The effect is largest when you stroke a cow on the underside of her neck which is also the part most often groomed between cows.

Stroking resulted in lower avoidance distance regardless of cow personality.

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YOGI BEAR AND THE OBSERVANT FARMER

There are three types of people: Those who make things happen, those who watch things happen, and those who wonder what happened. We're optimistic that readers of the Farm Report, "smarter than the average bear" as Yogi Bear would say, aren't the "What happened?" type. But that can be the result when farmers (or their crop consultants) don't walk their fields. Note the word "walk": A windshield appraisal from the comfy seat of your pickup truck isn't good enough. The situation in the outer few rows of corn — the vantage from a pickup truck — may be entirely different than what's happening in the rest of the field. This includes weed escapes, early signs of Northern Corn Leaf Blight (NCLB), armyworms, and corn rootworm adults feeding on corn silks. By July the corn may be too tall for postemergence weed control ("knee-high by the 4th of July" is a

long-outdated goal), but you may still have options for fungicide application to control foliar corn diseases. Corn hybrids differ considerably in their genetic resistance to NCLB, and if the hybrid planted in the field is different than what's in the guard rows the field needs particularly close examination. Be particularly observant of any BMR corn, since Penn State trials found some BMR hybrids to be highly susceptible to NCLB.

Walking your fields can prevent a problem like the one I encountered many years ago in a second-year corn field. The farmer planted corn, applied pre-emergence herbicide, and since it was close to the barn (so plenty of manure) the crop didn't need any supplemental N. Therefore, he never walked into the field from the day he applied herbicide until somewhat later in the season when he sensed

something wrong (probably from the seat of his pickup truck). By the time I was called in for advice all I could do was a postmortem: Wireworms had long since decimated much of the crop, taking over half the plants in large areas. (Yeah, I know — wireworms are reputed to be a problem primarily in first-year corn coming out of a sod, but not in Northern NY where often we see more problems in 2nd year corn.) Had he noticed this earlier he could have replanted the worst-affected areas, but not with his corn waist-high. He had also neglected to apply a planterbox insecticide-fungicide treatment, proving once again that two wrongs don't make a right. The large thin areas became weed nurseries (Mother Nature does so hate empty spaces), and yields were understandably poor.

— Ev Thomas
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BEE-UTIFUL

There are millions of land mines buried around the world, most of them left there by invading armies after they abandoned contested territory. Nobody knows exactly where the mines are, and they're very difficult to detect. However, land mines leak traces of explosive chemicals into the ground and into the air, and this is being used to advantage. Dogs have a remarkable sense of smell (a substantial portion of their brain is devoted to this sense), and "sniffer dogs" are used to locate buried land mines. But they don't find them all, and the weight of a dog is enough to detonate a land mine, giving new meaning to the term "dog-gone".

Researchers at the University of Montana are working on training honeybees to locate land mines. They spike sweet syrup with a small amount of the chemicals found in the mines. The bees associate the scent of the chemicals with a food source, and when they detect it make a beeline (!) for the mine. The bees are tracked by a form of military radar which is tuned to the frequency of the bees' wing beats. This all may sound far-fetched, but in tests run by the U.S. Army the bees were over 97% accurate in finding the land mines. Sweet!

— E.T.

NOTABLE QUOTES: WINSTON CHURCHILL EDITION

- Capitalism is the unequal distribution of wealth. Socialism is the equal distribution of poverty.
- Success is the ability to go from one failure to another with no loss of enthusiasm.
- I like things to happen; and if they don't happen I like to make them happen.
- Courage is what it takes to stand up and speak. Courage is also what it takes to sit down and listen.
- When you're 20 you care what everyone thinks, when you're 40 you stop caring what everyone thinks, when you're 60 you realize nobody was ever thinking about you in the first place.

WHAT'S HAPPENING ON THE FARM

As I write this article in mid-June we're chopping the last of our first cutting of grass. It was a drier spring this year and we were able to start cutting 2 weeks earlier than last year. We had good weather to start the 2018 harvest season -- long stretches of sunny days with a light breeze and low humidity. And then we'd have several days of rain and back to sunny days again. Perfect weather for cropping! The mower gave us some trouble -- a broken gear box but other than that, no major breakdowns. We were able to get manure right out onto the fields after chopping -- that will make a huge difference in our yields for second cutting. We always separate out good quality milk cow haylage from the lower quality grass haylage which gets fed to the dry cows and heifers. The green samples of milk cow haylage averaged 18% protein -- I think we can make some milk with that kind of forage!



Our summer farm management students have almost all learned to drive a tractor and merge hay. Several of them had no tractor experience, but they've caught on very quickly and have learned the pattern of merging the windrows of grass. Only once in a while do they leave a little patch of grass in the field "for the deer". I think that sometimes people who grew up on a farm and have driven a tractor since they could walk forget that operating large equipment can be very intimidating to non-farm kids. I didn't grow up on a farm and remember my first summer working at Miner, being nervous about the size of the tractor, about safely operating the piece of equipment behind it with all its fast moving parts. So we take our time and teach the students about tractor safety,

and let them drive slowly until they're ready to go faster. We teach them about the different controls and pedals and buttons and handles in the cab and how to turn at the end of the rows and to pay attention to the size of the implement behind them so they don't hit anything. Those few telephone poles can really do some damage! I'm so proud of the students for the way they've overcome some fear and apprehension to learn something new. They were a great help during first cutting, working long hours in the field to finish and I think they're proud of their new skills and their contribution to the farm!

As research studies begin and finish, we are often changing our forage sources to accommodate specific needs of the

study. We are of course also trying to maintain a healthy, high-producing dairy herd which means that all the cows must be getting the appropriate forages. Sometimes to meet both these goals we have more bunks and piles open than is ideal. We ran into a situation this spring where we had 5 corn silage faces open (some of them were small research bunks, but still...) Currently we're feeding off 3 corn silage faces which has been a challenge to keep ahead of the heating and spoilage in the summertime. The cows are milking in the mid 90's, butterfat for the month is 3.9% and protein is 3.05%. Components and production are down a little bit but hopefully once we get forages rebalanced we'll be back up. The haylage we're feeding the milk cows just came back from the lab with 14% protein... if that was a representative sample we need to open a silage bag of good quality haylage to feed the milking cows!

We've been getting ready for our county fair, working every day with our show heifers. A couple of the students have experience showing dairy cows while the others are learning how to halter break an animal and teach it to lead. It's a lot of work but so much fun and we're all looking forward to the fair. After we classified our herd this spring, we picked out a couple high scoring cows that we've been working with too... that's a whole different ballgame than a March calf, but they're learning to respect the halter. In less than 4 weeks we'll be at the fair eating fried dough and drinking milkshakes and taking care of our little show string.

— Anna Pape
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KEEPING SAFETY A PRIORITY ON THE FARM

We've all had experiences while working on the farm when we take a step back and say to ourselves "Wow, that was a close one!". If things had gone slightly different the outcome could have been drastic. Keeping all of this in mind I'd like to have a quick discussion about farm safety and encourage all of you to keep it a priority on farm.

There are several high risk situations and areas where safety needs to be a priority. The silage bunk is one area that needs focus. With the hay crop being harvested at this time of year remember to keep people clear of open bunks and equipment moving around the bunks. Remind any younger "farmers" present to avoid high traffic areas and to remain visible to those operating the equipment.

Maintaining a safe working environment is essential for everyone involved on the farm, and can be easy to maintain once the proper program has been implemented. There are three major aspects that need to be covered. The

first is proper training. The individual that is going to be completing the task needs to be properly trained, including an understanding of the equipment, procedures, and potential dangers. For example, having employees practice driving equipment with a supervisor/trainer present will allow them to ask questions as they arise and become comfortable operating that piece of machinery.

The second aspect is communication. As practices or procedures change, communicate with your team about how to properly complete the task and how to do it safely. Another part of this is creating an environment where the employee or individual feels comfortable discussing the task and any concerns that they have.

Finally, encourage safe practices as the leader of the team. One of the best ways to teach others is to lead by example. We've all cut corners ourselves, but by taking the time to do it the correct and

safe way, we will allow other employees to recognize that this is the way to complete the task.

Fortunately, the resources to create a safe environment are out there! There are hours of training videos on the internet, and the majority of these are free. Taking an hour to have employees watch a few videos on farm safety will help prevent potential headaches and bumps in the road. The majority of the videos are in English but there are a large number in Spanish as well. There are also several grants/funding for proper equipment which can reduce the cost to the farm.

The justification for safe practices is that it allows those working to focus on the importance of the task. If safety isn't a distraction they'll be able to focus on doing a good job for the cows. The goal is that we all stay safe while working on the farm so we can continue to do what we love!

— Wyatt Smith
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CONTACT, Continued from Page 1

The consistent positive interaction between the cow and the human likely reduced the fear of humans. In fact, the avoidance distance was reduced by over 30% with the greater contact between the milker and the cow. Importantly, the difference in avoidance was measured at the feedbunk and not in the parlor. Cows generalized the positive interaction that occurred in one part of the barn (parlor) to another (the feedbunk) which is a fact that could be exploited in routine management routines.

This research, as well as numerous other studies, shows that the behavior of milkers in the parlor is one of the major influences of how the cow will react to humans anywhere on the farm. Something to keep in mind when training milkers!

— Rick Grant
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ASSESSING FORAGE QUALITY

Forages are a major component of dairy cow diets. There's a wide array of forages around the world, and within forage species the nutrient variation from region to region or season to season can be very large. When formulating diets, it's vital to know the quality of your forage to ensure that the diet provides the correct amount of nutrients. This can be easily done when a representative sample is sent to a commercial laboratory where either wet chemistry or near infrared spectroscopy (NIR) is performed to provide the nutrient composition of the forage. These analyses can be useful to track and monitor forage quality. One question that commonly comes up is how to assess the quality of the forages on the farm.

The first thing to consider when trying to evaluate forage quality is what the forage provides for the dairy cow. Forages provide mainly fiber plus protein, starch, sugar, and other nutrients. Fiber can be quantified with neutral detergent fiber (NDF) which is cellulose, hemicellulose, and lignin. It can be further quantified as undigested neutral detergent fiber (uNDF) which is an in vitro fermentation for a specific number of hours usually 30, 120, and 240. The uNDF240 represents the indigestible fraction of the forage and can be used to calculate the potentially digestible NDF (pdNDF) by subtracting

Item	Corn silage A	Corn silage B
NDF, % of DM	40.1	37.2
NDFd 30h, % of NDF	55.5	67.5
uNDF240, % of DM	13.4	6.9
pdNDF, % of DM	26.7	30.3

Table 1. Comparison of corn silage based on fiber measurements.

uNDF240 from NDF. Another fiber measure is NDF digestibility (NDFd) which quantifies how much NDF is digested for a specific amount of time, usually at 24 or 30 hours. Protein, starch, and sugar are also important nutrients to monitor and quantify. The various forage species such as corn silage, haycrop silage, and hay provide differing amounts of nutrients and are utilized differently in dairy cow diets. So it's important to assess quality within a species.

Fiber is fermented by rumen microbes into volatile fatty acids, and then those rumen microbes can be used as protein source for the cow as they pass to the lower tract. The more NDF a forage has is important, but not the whole picture as NDF is heterogeneous in nature. There are several fractions from digestible to indigestible. When evaluating two corn silages for just fiber measures in Table 1 if you just use NDF then corn silage A would be the better choice with the higher amount. If you add NDFd at 30 hours, uNDF240 (indigestible

fraction) and then calculate pdNDF it's clear that corn silage B is more digestible with a lower proportion of indigestible NDF and higher pdNDF with which the cow can utilize. Using these other measurements allows for better differentiation of low and high quality forages. Protein and starch content are important to consider as forages with high protein and starch can be utilized to lower purchased feed costs. This way of evaluating forages is specifically focused on fiber, but it is important to consider other nutrients depending on forage species such as stover to grain ratio.

Assessing forage quality is vital to create accurate diets being fed to dairy cows. Fiber is one of the main nutrients provided by forages and is heterogeneous by nature. Utilizing several fiber measures such as NDF, NDFd, uNDF240, and pdNDF can help to differentiate and track forage quality.

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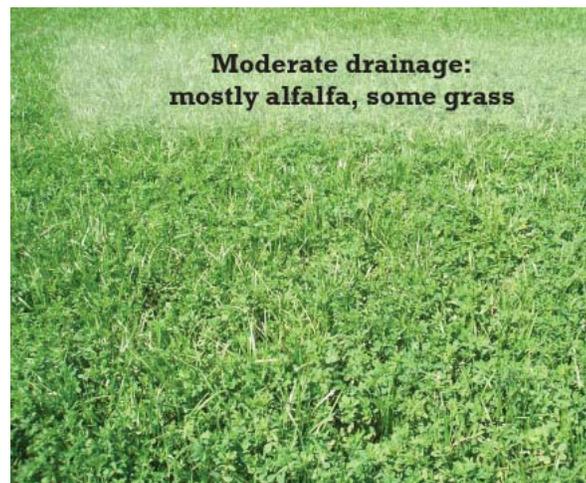
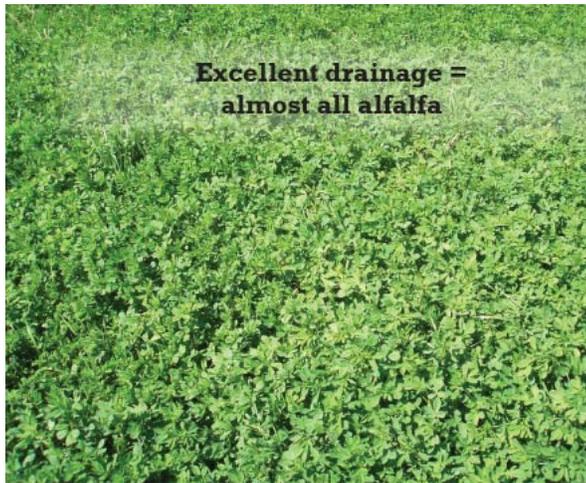
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ALFALFA-GRASS

Farmers in the Northeastern U.S. and Eastern Canada differ greatly from the rest of North America in their alfalfa seeding practices. Over 80% of alfalfa in our area is seeded with a cool-season forage grass, while in the rest of the continent about 90% of alfalfa is clear-seeded (no grass). Much of this is because of variable soil types and our rugged winters, but alfalfa-grass is well-adapted in a lot more of the country than where it's currently popular.

One of the concerns expressed about seeding alfalfa-grass is that the grass will compete with the alfalfa. During ideal weather for grass germination (cool, moist) it sometime seems as if every grass seed produces a plant. This can be a problem, which is why we recommend modest rates of grass in alfalfa-grass seedings: 12-15 lbs. of alfalfa and 3-4 pounds of grass, the grass seeding rate depending on species and conditions. It's critical that soil test K be medium-high or high before seeding alfalfa-grass.

My experience at Miner Institute is that this rate of alfalfa-grass results in stands that are almost all alfalfa where soil drainage and fertility are excellent, with increasing proportions of grass as drainage becomes less than ideal. The accompanying photos are of a field on the Ridge Road just Northeast of the Institute dairy complex. The field was seeded with 14 lbs. of alfalfa + 4 lbs. of tall fescue per acre. In the first photo you can see a line running across the



field from left to right. But the field was seeded front to back, so this has nothing to do with the seeding pattern. Soil fertility was very good, and pH was extremely high, so it's not any nutritional deficiency either.

What you're seeing is the effect of two soil types: The soil in the front of the field is a very well-drained gravel loam, while the soil in the back of the field is a sandy loam that's only moderately well-drained. As you can see in the second photo, where alfalfa-grass was seeded into very well-drained soil the alfalfa dominated and there's almost no grass. But in the third photo the moderate drainage favored the grass. There's still a good stand of alfalfa, but there's also plenty of tall fescue.

That's why I strongly recommend seeding alfalfa-grass in fields with variable drainage: Using the correct grass species (tall fescue once was my favorite, now meadow fescue is top choice because of higher digestibility) results in a good stand of alfalfa-grass where drainage is moderate while allowing the alfalfa to dominate where drainage is near ideal.

What happens if you seed alfalfa-grass and wind up with much more grass than you intended? I have no research on this but suspect that if you mowed your first cutting at less than 4" stubble height normally recommended for alfalfa-grass (but no less than 2") you might "insult" the grass while doing no harm to the alfalfa. Hey, it's worth a try.

— E.T.

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