As I was scanning the table of contents of the most recent issue of the Journal of Dairy Science a title jumped out at me: “Public and farmer perceptions of dairy cattle welfare in the United States” (99:5892-5903). If you have ever wondered how public concerns about cattle welfare differ from that of a farmer, this paper appeared poised to answer your questions.

The online survey focused on over 2000 people who were the primary household food shoppers to gauge purchasing and consumption preferences. The farmer survey was conducted by mail and included nearly 700 dairy producers from California, Florida, Indiana, Michigan, New Mexico, Vermont, and Wisconsin – states that represent 47% of U.S. milk production.

The survey respondents were 70% female and the average age was about 51 years old. About 97% had graduated from high school with 34% holding a BS or higher college degree. So, the sample was older, more educated, and had more females than the broader U.S. population. The dairy farmers averaged nearly 52 years of age and had 346 cows on average producing 24,478 lb/yr.

What did the survey find? About 63% of public respondents are concerned about dairy cattle welfare in the U.S. – not really a surprising finding. In addition, though, these same folks also felt that dairy farmers face a trade-off between profitability and animal welfare. Now that is food for thought for our industry – how do we go about convincing the public that this is not the case and that profitable management systems can and do promote cow well-being?

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Only 30% of respondents had seen media reports on alleged animal abuse – most commonly on TV or the internet. When asked about who they trust to provide accurate information on cattle welfare, the ranking from highest to lowest was: 1) USDA (a good thing), 2) HSUS (not a good thing), and essentially tied with HSUS was the American Veterinary Medical Association. Lower ranking sources for perceived accuracy included Farm Bureau, university scientists, National Milk Producers Federation (NMPF), local veterinarians, and PETA. Information from grocers and restaurants was viewed as least accurate.

The survey also asked the public to rank the ability of farmers, consumers, government, industry, and other organizations to influence dairy cattle welfare. The public believes that USDA and dairy farmers have the most influence, followed by national industry

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HARVEST TIMING AND CORN SILAGE QUALITY

Research consistently shows that harvest timing is one of the most important factors determining forage fiber digestibility and its efficient utilization by dairy cows. A typical target moisture level range for optimum corn silage quality is 32% to 35% dry matter (DM). Since hybrids respond differently to changes in weather and stress at the end of the season, the length of time hybrids remain in this “harvest moisture window” during dry down is a function of genetics and growing environment. In general, digestibility decreases as whole plant %DM increases beyond optimum. Hybrids that dry down more slowly allow quality to be maintained longer compared to a faster dry down.

We worked with Donald Upton and Chemgro Seeds last season to evaluate changes in quality for corn hybrids when sampled at varying % DM. Twenty hybrids were grown at Miner Institute and on a dairy farm near Black Lake, NY. Plants were hand-sampled from plots every 3 to 7 days, run though a chopper and sent to Dairy One for analysis. Our goal was to capture a range of 25 to 40% whole plant DM. In addition to routine quality measures, uNDF (at 30, 120, and 240 hr time points) was also measured via NIR.

The undigestible NDF (uNDF) digestion curve across the 30, 120 and 240h time points appears to be a good indicator of dry matter intake potential. The higher the uNDF value of a given forage, the longer the rumen retention time, thereby setting a fill limit on DMI (Cotanch et al., 2014). Recent work at the institute showed that uNDF (measured at 30, 120, and 240 hr) varied significantly among bm1, bm3, and non-bmr hybrids, suggesting uNDF as an important measure for ranking hybrids. This could be especially valuable when evaluating forages/hybrids in attempts to maximize forage intake.

Our samples ranged from 20% to over 40% DM and showed that starch content increased strongly with % DM. About 35% starch was reached at 35% DM (based on cubic regression). This relationship is consistent with other reports and highlights the importance of harvest timing and moisture on total starch yield. However, since 30-hr NDF digestibility (NDFD30) was negatively related with %DM, delaying harvest from 32% to 40% DM was associated with a 7% drop in NDFD30. Thus, harvesting beyond 35% DM for more starch may be offset by a corresponding reduction in fiber digestibility.

Results also showed that uNDF profiles varied across the period of harvest (see inset figure). It appears that uNDF may increase during dry down across the harvest window. Though, to verify this relationship requires greater replication and possibly wet chemistry analysis of the fresh chopped forage. For more information on this project contact Kurt Cotanch, Eric Young, or Donald Upton (donaldu@chemgro.com).

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CALF HEAT ABATEMENT STRATEGIES

With annual losses of approximately $253,000 for heifers 0 to 1 year of age in New York alone due to heat stress according to data analyzed by The Ohio State University and the University of Illinois, heat abatement strategies are imperative to the economic status of dairy producers. Many producers tend to focus most of their heat abatement efforts on their lactating cows due to the immediate decline in milk production. Often the calves are forgotten about because the production responses are less apparent. However, as previously heat-stressed calves continue through life, growth and production will be depressed when compared to non-heat-stressed calves.

Nutrition
During heat stress, calves must use more energy to regulate their core body temperature, which requires them to consume more nutrients to meet this need. Research conducted by Provimi North America has indicated that as calves become heat-stressed, intakes decline, therefore reducing average daily gain (ADG). During the winter months calves will make up for the additional energy requirement to thermoregulate by consuming more starter, but in the summer months calves won’t consume more starter, even though their maintenance energy requirements have increased due to heat stress.

One way to increase energy intake of the calf is to increase energy density of the diet so the calf can get more energy but eat the same amount. This is often achieved by adding fat because of its high energy density. Fat has also been shown to reduce metabolic heat production per unit of energy fed according to a study conducted at Louisiana State University, but careful consideration needs to be taken into account to not add too much fat as it may impair ruminal fermentation.

Another strategy to increase the amount of energy consumed by calves during heat stress is to feed more milk replacer. Studies at Provimi North America have found increases in ADG and hip width when calves were fed more milk replacer under heat stress. Providing fresh starter and water is also extremely important during the summer months and should be offered ad libitum. Even though most calves will not increase their starter intake during heat stress, it is important to provide fresh starter to encourage them to eat, so that they can better meet their increased energy needs due to heat stress. Water is important to avoid dehydrated calves and during heat stress, water intakes will increase, which may require filling water buckets multiple times per day or adding an additional or larger bucket of water during heat events.

Management
As temperatures rise, finding ways to cool the calf’s environment is important to reducing heat stress on the calf. This can be accomplished by opening doors and vents on calf hutches or propping up the back of the hutch with a block to provide more airflow. If calves are housed in a barn make sure side walls and doors are open. Fans can also be added to provide more airflow.

Shade is another important factor to help cool the calf’s environment. Studies conducted at the University of Missouri and Auburn University in Alabama found that placing a shade cloth above hutches was found to reduce temperatures inside the hutches by 3-4 °F. Adding a reflective surface to the hutches can also reduce temperatures inside of hutches. Another study found that the inside temperature of a calf greenhouse covered with either a clear plastic film overlaid with shade cloth or a white plastic film without shade cloth was cooler than the outside ambient temperature.

Material used may have an impact on the calf’s environmental temperature as well. For example, plywood hutches have been shown to have a lower inside temperature than polyethylene plastic hutches and inorganic bedding such as sand has been shown to cool calves by absorbing and dissipating body heat compared to organic bedding such as straw or sawdust.

Another strategy to reduce heat stress in calves is to work with calves during the cooler times of the day. This includes feeding, pen movements, vaccinations, and dehorning. All of these things can increase core body temperature and respiration, so doing any of these tasks during the hottest part of the day will further exacerbate the effect of heat stress on calves.

Reducing heat stress in calves through nutrition and management is important to the economic status of a dairy farm as well as the welfare of the calf. By implementing heat abatement strategies, ADG can be increased, while mortality and morbidity can be decreased, making your farm’s calf program more successful.

— Kayla Hultquist
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REduced-LIGNIN ALFALFA

I think reduced-lignin alfalfa will be a real winner — though primarily for clear stands of alfalfa, not alfalfa-grass. Research trials indicate that reduced-lignin alfalfa, both the genetically engineered varieties and those produced using conventional plant breeding, has improved forage quality and equal or higher yields compared to “normal” varieties. The yield advantage may increase in later production years if delaying each harvest by 5-10 days results in one fewer harvest per year. The immediate gains would be higher quality and reduced harvest costs, but don’t overlook the impact of reduced field traffic on long-term plant health. As we’ve said before, alfalfa doesn’t die — we kill it: nutritionally by aggressive harvest management, and physically by wheel traffic. Harvesting at the bud stage doesn’t give the plant enough time to fully replenish root reserves, and this combined with wheel traffic damage can deplete stands. The potential advantages are enough that we’ll probably see a number of clear seedings of reduced-lignin alfalfa in areas where alfalfa-grass has been the typical seeding practice. However, many fields, particularly those with variable drainage, will still yield higher with alfalfa-grass: What we really need is a forage grass with a maturity to match the harvest schedule of reduced-lignin alfalfa.

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TIME TO GIVE UAN ANOTHER LOOK

Urea-ammonium nitrate (UAN) prices have been in a general decline since 2012, and the opening of new manufacturing facilities suggests that prices will come down even further (relative to other sources of nitrogen fertilizer). This represents a buying opportunity for farmers. UAN has long been one of my favorite N sources, for a couple of reasons: First, because it’s a liquid it can be applied more uniformly precisely (not the same) vs. broadcast application of granular N fertilizer, and a nitrification inhibitor such as Agrotain can be added to reduce volatilization losses. At Miner Institute we’ve used it not only for sidedressing corn but for spring topdress of established grasses. Second, UAN has two forms of N — ammonium and nitrate — and research has shown an advantage of having two forms of N available to plants. It’s a bit late to be making changes in 2016, but in planning for 2017 you should price the various sources of N and give UAN a first — or second — look.

— E.T.

NOBODY ASKED MY OPINION, BUT...

…I have everything I wanted as a teenager, only more than 50 years later. I don’t have to go to school or work, I get an allowance every month, I have my own pad, no curfew, a driver’s license and my own car. My friends aren’t worried about getting pregnant and they don’t use drugs. And I don’t have any zits.

… arguing with a woman is like reading a software license agreement: In the end you ignore everything and click “I agree”.

…when I hear politicians talk about a “more equitable distribution of wealth” I figure they’re talking about other people’s wealth, not theirs.

…for any girl considering getting a tattoo, remember: When you get older a butterfly on the back becomes a buzzard in the crack.

— E.T.
OVERSTOCKING: COMPETITION MAKES THE MOUTH GO DRY

In a recent trial run here at Miner Institute we focused on measuring the short-term effects of overcrowding on ruminal health in dairy cows. As one would expect, compared to a 100% stocking rate, overstocking at 142% of free-stalls and headlocks resulted in greater risk of sub-acute ruminal acidosis. Typically, cows in overstocked housing will alter their feeding behavior due to the increased competition for resources, particularly animals in their first lactation. Sub-dominant cows will often slug feed at the bunk in order to avoid aggression from more dominant cows. These behavioral changes result in decreased eating time and a greater fermentable carbohydrate load entering the rumen at a given time. Because saliva production can’t keep up with this increased fermentation in the short term, ruminal pH will drop which puts the cow at risk of SARA.

Interestingly, we did not observe these typical behavioral changes in the recent study. Both 100% and 142% stocking density treatments had similar DMI, eating time, rumination time, number of feeding bouts, and length of feeding bouts. In addition, Penn State shaker box results indicated no differences in feed sorting between the two levels of stocking density. So if fermentation rate didn’t change due to differences in feeding behavior, then what was causing the difference in SARA risk? The likely answer: differences in saliva production.

Thinking about the problem differently, if there were no differences in feeding behavior that would alter drops in pH, what if there were differences in saliva production that counteract the severity of these drops? Researchers from the University of Saskatchewan showed that saliva produced during eating, ruminating, and resting contributed 22%, 50%, and 28% of total daily saliva production. From these numbers we can see significant contributions of saliva solely from resting, even greater than during feeding. With the recent study we found a significant decrease in resting time and increased idle standing time for cows in overstocked pens. Thus, it’s likely that these alterations in resting time affected total saliva production and the ability to buffer drops in ruminal pH.

Another likely answer would be differences in salivation rate. As there were no differences in eating and rumination time (which combined would contribute almost 75% of total saliva production), the other alternative would be reduction in salivation rate per chewing time. This would also reduce the total amount of saliva and less effectively buffer the rumen. Cows in overstocked pens spent less time ruminating in the free stall as a percent of their total rumination throughout the day. This shift in rumination from comfortably lying down to unwanted standing in the cross-alleys may have increased stress on the cow and reduced the amount of saliva produced during that rumination period. This increased stress or discomfort was further evidenced by an increase in stall usage efficiency at higher stocking densities. Once the animals had access to the resource, they took advantage of it at a much higher rate than those with ample opportunity.

Unfortunately, we’re limited in our ability to go back and measure these differences to find out if they indeed contribute to the increased risk of SARA in overstocked animals. Further research is needed to understand if feeding behaviors change during overstocking or why overstocked animals seem to be at higher risk of SARA, regardless of these behavioral changes. However, it’s important to note that these findings were done in the short-term (14 day periods), and differences may occur with longer adjustments to overstocking. While there are no distinct answers, the possible explanations presented can certainly offer guidance in the ways we manage our herds. In times of overstocking, lack of free-stalls can increase risk of SARA just as much as reduced space at the feedbunk. Furthermore, these effects are likely to be exacerbated in first lactation animals. Splitting pens by parity or grouping more timid animals can increase their resting time and reduce their risk of SARA. Increasing stall comfort may maximize stall-usage efficiency and help reduce losses in saliva production during resting. Management and the environment play large roles that impact ruminal health and recognizing these key factors can reduce risk of SARA, maximize well-being, and optimize efficiency during overstocking.

— Mac Campbell

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Tickets are $6 each and are available at the Miner Institute Farm Office, The Strand Box Office or at strandcenter.org.
WHAT’S HAPPENING ON THE FARM

I wait all winter for warm summer days like the ones we’ve been enjoying lately! It’s been a beautiful, although dry summer. First cutting is finished and we spread manure afterward. Now we are waiting for the grass to grow (by the time you read the Farm Report we’ll be harvesting again). The corn hit the traditional target of “knee high by the 4th of July” and the new seedings have taken well – we will cut them for the first time when we do a second cutting of the other fields in early July. This year we planted oats and peas with the perennial grasses when we seeded down a field. This has worked well for us in establishing the new grass and choking out the weeds.

We have used this break from harvest to catch up on hoof trimming – we had quite a few long toes. Kris has been busy in the shop and driving truck, but devoted a couple of days to trimming at the end of June and we made great progress; mostly maintenance trimming, although there were a few sole ulcers and white line cracks. No foot rot or hairy heel warts. We have been running the footbath just 4 milkings a week for a while and have been able to save on copper sulfate cost without sacrificing hoof health.

What we really need now is 8 days in a week…this summer we feel behind on many fronts and just barely staying on top of others. This summer has seemed busier than usual! We have picked up some extra corn and hay fields, Barnes Excavation has been at the farm fixing and installing some tile drainage and clearing a driveway, and it seems like every week a different piece of equipment has needed repair. There was lots of preparation for the Open House (all worth it, though, it was a big success!). We are helping the students learn and experience the daily operation of the farm...anyone who has taught before knows what a rewarding and exhausting experience that is! They are doing really well, paying attention, working eagerly, asking good questions and now that they’ve had some training, are able to help with some daily tasks around the farm. Despite the feelings of being overwhelmed by the to-do list, we are getting the jobs done and the cows continue to milk at 95-98 lbs/day. On the horizon...some employee training and a couple of barn meetings and getting ready for our county fair.

— Anna Pape
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PERCEPTION, Continued from Page 1

groups such as NMPF. Overall, the respondents indicated that farmers have direct daily interaction with their cows and so have the greatest ability to influence their welfare. This finding makes sense and agrees with the farmers themselves who indicated that they had much more influence on cow welfare than any other segment of the dairy food chain. Not surprisingly, the results of the survey also indicated that dairy farmers don’t care to be told which management practices are acceptable when it comes to well-being.

Finally, the study examined public attitudes on limiting antibiotic use, castration, and use of rbST as three hot-button issues. About two-thirds of respondents said they would vote to limit antibiotic use and ban castration without pain control – not surprising. More surprising to me was the finding that only 49% would vote to ban rbST use, with about one-third indicating that they would pay a premium for milk produced without rbST. Respondents were more likely to say they would vote for restrictions on production practices if they were older, female, and had higher income.

This study provides one of the most comprehensive, up-to-date assessments of public and farmer perceptions of dairy cow welfare that I have read. Anyone involved in the US dairy industry ought to take time to read it and think about what it may mean for future US dairy regulations and welfare policy.

— Rick Grant
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Your July Farm Report
Is Here

Miner Institute saw about 800 visitors for its June 25 Open House.

Closing Comment
In an emergency always identify who to blame.