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Are we stressed yet? Yes, it matters!

Stress, cow comfort and other thoughts

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As I listened to Tom and Sally Brown, organic dairy farmers from Groton, NY, describe their struggle with Johnes, I was reminded of what Dr. Ann Wells, DVM from Arkansas says about cattle stress and its relation to health. This makes so much common sense - not just for Johnes, but for most diseases and production/reproduction problems:

Stress is a major contributor to disease in animals. When doing farm calls, Anne likes to first observe the cows from a distance in a pasture or in the barn, keeping close track of which animals are not with the rest of the group or who are acting “differently”. As she walks toward the group, she notices which animals don’t readily get up and act or in a predictable manner. She feels that those ‘outlayers’ can be to be early indications of sub-clinical problems, and can help alert a farmer to where management changes are needed. She then analyzes the body condition of each animal, noticing body fat, hair quality and other factors which can indicate low grade conditions. Even noting which animals have the most flies around them is important – flies seem to bother weakened animals more than strong animals.

Sudden or acute stress is often much less of a problem to animals than chronic or periodic stress which can seriously depress the immune system. While it is often easy to detect the causes of acute stress - calving, disease, sudden changes in temperature, it is often more difficult to notice chronic stress because it comes on gradually. Some common causes of chronic stress include nutritional inadequacy, lack of sufficient clean water, mycotoxins in feed, mud or ice, stray voltage, lack of ample bedding or other discomfort in stalls, and internal parasites. Chronic diseases, social interactions between cows, and genetic predisposition will make some animals more susceptible to stress than others. Human/animal interaction can be a source of stress too – she feels it is very important to always handle animals calmly, using your imagination to develop ways to avoid exciting or irritating them. Animals under stress frequently require increased nutrient intake to maintain body condition and health. Ann feels that, in order to maintain a healthy herd that requires little disease treatment, it is very important to learn how to identify what a stressed animal looks like, to identify which factors on your farm that create stress, and then do what you can to minimize those factors.

I recently had the privilege of taking a 5 session course from the good folks on the Cornell Cooperative Extension's Northwest NY Dairy Team on Dairy Feed Management. While the course did spend plenty of time evaluating rations, feed ingredients, forage particle size, TMR mixing techniques and other specifically 'feed' related topics, the most interesting discussions and barn visits revolved around cow stress and cow comfort. This is so important to us organic farmers that I took lots of notes! On our barn walks, we assessed the animals for signs of stress, evaluating many of the characteristics that Ann does when she walks onto a farm.

It is amazing how milk production, disease and breeding problems are often NOT the result of something big and obvious, but instead the accumulation of many things you probably could have seen, had you known what to look for, if you knew what the clues meant. Good dairy management is the result of lots of little improvements, not one nice silver bullet.

The trick is to actively practice walking into your barn - looking, watching, smelling, feeling - as if you've never been in that barn before, as if these were someone else's cows.

To borrow a phrase from the Dr. William Albrecht, the great soil scientist - this sometimes is how you SEE what you are looking at, and then understand what it means.

STALLS - When not being milked, comfortable cattle should be doing one of three things - standing at the feed bunk eating, standing at the water tank drinking, or lying down resting - it is simply not their nature to just stand for any length of time. Count the number of cows that are comfortably lying down an hour after morning milking and feeding. If less than 50% of the are lying down, and especially if many are 'perching' in stalls or standing in walkways, the stalls may be uncomfortable, insufficiently bedded, or there may be too many cows for the amount of space (over-crowding).

BEDDING - does the bedding keep cows clean, dry and cushioned? This isn't a matter of just being nice to your cows - it is well known that there is more blood flow to the internal organs and the udder when a cow is comfortable. Better quality rest means more milk and healthier cows. Different farms prefer different types of bedding, but regardless, there must be enough. To test whether there is enough bedding in the stall -

" Wet knee test" - kneel down in the stall for 10 seconds. If your knee gets wet, the bedding is too thin.

" Drop knee test" crouch in a stall, then kneel. The pain (or lack of) in your knee tells you what your cows are feeling!

" Cow hock test" - learn to score cattle hocks. Are there patches of rubbed off hair, abrasion, swelling or bloody, sores on the hocks? This can be a sign of uncomfortable stalls and inadequate bedding.

VENTILATION - are there signs of poor ventilation such as ammonia smell, excessive coughing, nasal discharge, open mouthed breathing, condensation on building surfaces or on cattle, or even cobwebs?

WATER - is there enough water available for your number of cows? A high producing cow should drink about 20-30 gallons of water each day - and a limitation in available water will reduce dry matter intake, which will reduce milk yield. Is the water clean and does the tank refill fast enough so all cows can drink as they want? If there is not sufficient water, your more aggressive cows may get enough by pushing the more timid away. Are water tanks easily accessible when the cows are on pasture? Do water tanks/cups freeze in the winter? Is there buildup of feed, manure, and other debris in the tank? If it is too much trouble to get water, many cows simply won't try very hard and won't drink enough, at the expense of milk production.

FLOORS - Watch how your cows come into the barn. If they move slowly, reluctantly, or if they slip or slide, the floors may be wet, mucky, slippery, and uncertain. Consider grooving concrete walks for better traction.

LAMENESS SCORING - watch the cows and evaluate each one for how she walks. A cow with painful feet will hunch her mid back, arch her head down and forward, and walk hesitantly, often favoring one or more legs. A lame cow will also be more likely to perch in a stall, afraid to lie down because getting up is so painful - indeed, studies show that lame cows typically spend 3x more time standing than non-lame cows. Look at the "ridge line" of each cow's back - is it straight across or does it arch up in the middle? Especially in the subtle early stages, lameness scoring can provide valuable clues about your feeding program and the quality of your forage, since lameness, laminitis and other hoof problems are closely linked to acidotic rumen conditions.

MANURE SCORING - of course you look in the gutters every day, but believe it or not, experts recommend scoring manure on a 5 point scale, with 1 = pea soup to 5 = firm fecal balls, and 3 = porridge or shaving cream-like consistency that stacks up in concentric rings 1 ½ - 2" high as being optimal! Undigested grain, forage fibers, foam, blood, 'black tar' or mucus, or manure that is bubbly, shiny, grainy, or an unexpected color or smell can indicate digestive issues that warrant further detective work.

BODY CONDITION SCORING - while you're busy scoring, it is a good idea to evaluate body condition of each cow and heifer, and learn how to critically watch for changes and key characteristics. Whether too fat or too thin, cows at either extreme show decreased milk production, poorer conception rates, more difficult calving, and higher susceptibility to disease and metabolic disorders. There are good books and charts available that can guide you on scoring body condition, what parts you should be looking at, and what the scores mean.

FORAGE QUALITY AND PARTICLE SIZE - cows need to eat forage and silage with large enough particles for adequate chewing and ruminating (chewing the cud) and proper rumen function. An actively

chewing and ruminating cow makes lots of bicarbonate, which neutralizes excess rumen acids. Good 'effective' fiber is also necessary for the right rumen bugs to be healthy, which keeps everything else in balance.

Your nutritionist may have a fancy shaker box that separates particle size objectively, but you can estimate this by taking about a quart of forage and separating it into (1) particles that will go through a ½ inch hole, (2) particles that will go through a 1 inch hole, and (3) particles larger than a 1 inch hole. Ideally, a well prepared forage will have ≤40% in group 1, ≤40% in group 2, and 10-25% in group 3. Too low a percentage of the large particles results in less chewing and more problems.

Since most of the participants of the class were from large conventional dairies, we talked a lot about TMR's. Even if the forage/silage has adequate particle size going in, if the feed churns in the mixer wagon too long, if the mixer is over or under-filled or not working correctly, the particles can get chewed up or the feed may not be uniformly mixed, resulting in a much poorer quality feed. We heard of one farmer, having persistent problems with low-grade acidosis and DA's "for no good reason", was absolutely convinced he was only mixing the feed for 20 minutes, until his nutritionist surreptitiously timed him, the mixer running as the farmer multi-tasked feeding the calves, scraping walkways, doing other chores. An hour later (the farmer still thought only 20 minutes had gone by), the feed was ground much finer than what is healthy for the cows!

One of the nutritionists who spoke with us says that he rides along on the silage chopper, helping the farmer set it correctly, taking samples, evaluating particle size and the amount of grain maceration, making necessary adjustments until they get the texture right. I was impressed!

We also talked about FORAGE SPOILAGE, examining and smelling several different samples of truly disgusting stinky smells and colors. Spoiled and moldy areas are especially a problem in round bales stored outside and baleage with broken plastic. If it doesn't smell good to you, it probably won't to your cows!

Are your cows eating what you think they are? First - (1) there is the ration on paper that your trained nutritionist carefully develops and (2) there is the ration that actually goes in the manger. Are they the same? Are you sure? One of our dairy customers recently realized that his employees were competing for how much milk they could make by using 'just a little more' feed than they'd been told to. "Just a little more" for a few days can add up to quite a lot more - he ran out of feed almost a week before he should have! The employees don't pay the feed bills, nor do they figure whether the increased milk is worth the increased feed, but most importantly, they don't see the long term negative effects that excess grain may have on cattle health and reproduction. Also, we all know that when forage quality changes, then feed quality will change - duh! But do you always take samples and make ration adjustments each time your forage quality changes?

Then, (3) there is the ration your cows actually eat and (4) the ration the cows actually digest. Do you measure and evaluate the feed your cows refuse both by how much, and by what components? Do you push up the refused feed several times, just to make sure the cows eat everything they are going to? If there are some ingredients that are being sorted out, this will likely change the desired composition of the ration. Examine the refusals closely - is there a palatability/quality issue such as molds, mycotoxins, or spoilage? If after several push-ups, the cows still don't want to eat something, there is probably a pretty good reason. Also, is undigested feed coming through in the manure? Undigested feed and feed refusals do you and your cows no good - they are just expensive fertilizer!

Many farmers call Lakeview or their nutritionists, looking for that magic ration, a little more protein, a new probiotic, maybe some kelp - just something to increase milk production. Ithaca dairy consultant, Corwin Holtz, says "there are very few bad feed programs out there, the bigger challenge is to help dairy farmers improve the cow's ability to express the potential. In terms of dairy management, he ranks the **SEVEN BIG MANAGEMENT AREAS THAT MAKE A DIFFERENCE** - 25% cow comfort, 25% forage quality, 15% transition/dry cow management, 15% reproduction, 10% routine, 5% social interaction, and 5% nutrition.

That says to me that, as good as the organic feed we make is, there are lots of other things that probably matter more!

. . . humbling, but probably true!