

DAIRY CONNECTION

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EDITORIAL

The excitement created by the renewable fuels explosion has generated some real opportunities for North Dakota and the region. If you were in attendance at the 2007 Dairy Cow College, I shared an overview about the potential synergies associated with ethanol production and livestock expansion. However, the darling of Wall Street also has the potential to be the scourge of the livestock world, driving the price of

corn from about \$1.40 a bushel last September to more than \$4 a bushel by today.

Among the many issues associated with distillers grains byproducts from the dry milling industry, the fact is that most of the starch is removed from corn on its way to becoming distillers grains. This is a significant fact to address when buying distillers grains to replace protein and energy in the cow ration, especially for high-producing cows. Feeding starch to high-producing cows is imperative to achieve optimal milk production and maximum rumen microbial growth and maintain desirable milk components. Current ration recommendations are 24 percent to 26 percent starch plus 4 percent to 5 percent sugar.

The table lists feed ingredients that can be used to meet starch and sugar guidelines. Determine whether these feed ingredients are "good buys" to replace corn in your ration using break-even computer programs (such as Sesame from Ohio State University or Feed Val from the University of Wisconsin). Some programs will calculate a shadow price indicating the optimal prices when a feed can remain in a ration.

Here are some things you can do to stretch starch levels:

- Process grain properly. Proper grain processing is important to optimize rumen fermentation and digestion in the small intestine. For dry corn, the target is a 1,100-micron particle size. Using high-moisture corn (in excess of 26 percent moisture) can add to rumen starch availability.
- Add monensin. Adding monensin (Rumensin) can shift rumen fermentation to more propionic acid production and can lower the level of starch needed. The recommended level of monensin varies from 250 to 350 milligrams per cow per day.
- Don't forget that corn silage can be an economic source of starch. Starch levels in corn silage can vary from 14 percent to 45 percent, depending on drought and heat stress, variety, growing conditions, cutting height and maturity days.

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- Process corn silage. This can improve starch availability. It also reduces grain passage and improves starch digestibility, especially in corn silage of more than 34 percent dry matter.
- Feed higher quality legume and grass forages. This can lower the need for corn grain. More fermentable carbohydrate is available from soluble fiber sources, and you can get higher dry-matter intakes.

Dairy cows “run” on starch as it is a big source of rumen fermentable carbohydrate. Even with higher corn grain prices, do not reduce the ration starch levels too low. Consider other starch-containing feeds, add sugar sources to improve rumen fermentable carbohydrate, process grain properly and feed high-quality forages. This will be a challenging year even if milk prices rise because the costs of feed are up!

Starch and sugar in feed ingredients.*

Feed	Starch, %	Sugar, %
Corn silage	14 to 45	1.3
Alfalfa hay		
Corn grain	70	1.1
Barley grain	58	2.0
Wheat grain	64	2.5
Oat grain	43	2.0
Milo/sorghum grain	68	1.3
Brewers grains	4.5	6.0
Soy hulls	3.0	2.0
Beet pulp	1.4	7.3
Corn gluten feed	20	2.0
Corn distillers grains	2.5	3.5
Wheat midds	22	5.0
Fuzzy cottonseed	1.0	2.0
Bakery waste	45	8.0
Sugar cane	2.0	94
Corn starch	99	0
Whey	0	69
Molasses, cane	0	61

*100 percent dry-matter basis

■ CALVES

Top 10 Tips for Calf Managers

The Professional Dairy Heifer Growers Association’s educational campaign in 2006-07 is featuring a profit seminar series for calf and heifer raisers. On the issue of raising calves, the program cites successful managers who:

1. Understand and implement practical methods to feed colostrum to newborns
2. Feed all the colostrum harvested, even if it tests poorly (using a colostrometer) or is from heifers
3. Know they cannot use second-milk colostrum as a substitute for colostrum when they don’t have enough colostrum to feed

4. Properly evaluate whether pasteurizing colostrum and waste milk is necessary before feeding it
5. Determine that calves are getting adequate colostrum
6. Recognize that hygiene, next to colostrum feeding, is the second most important principle of calf management
7. Understand how to use vaccines in their calf-management program
8. When treating diarrhea, do not take calves off milk and milk replacer
9. Recognize that calves grow best when fed milk or milk replacer and good-quality grain mix until weaning
10. Understand that the transition of weaning and regrouping calves from individual hutches is a stressful period for them

More seminars are planned for 2007.

Calf Status With Clothespins

Here’s an idea that bears repeating – colored clothespins to indicate the feeding schedule of calves. Some clients of highly recognized Sam Leadley, Attica Veterinary Associates in New York state, implemented a color-coded communications concept to keep hutch-fed calves properly fed. Here’s what each clothespin color means:

- green = 2 quarts of milk twice a day from 1 to 10 days of age
- white = 3 quarts of milk twice a day from 11 to 41 days of age
- green = back down to 2 quarts twice per day for five days (41 to 46 days old)
- red = 1 quart of milk twice per day from 46 to 51 days of age
- blue = no milk beginning at 51 days of age

Don’t Wait to Harvest Colostrum

Waiting to harvest colostrums until the next scheduled milking time may be detrimental to the colostrums’ quality. Immunoglobulin (IgG) concentration decreases as the interval between calving and colostrum collection increases. A study, conducted at the University of Missouri, shows that colostrums harvested within two hours of birth had an average IgG concentration of 11.3 grams per deciliter. By 14 hours after birth, IgG concentrations had dropped by a third to 7.2 grams per deciliter. Make a rule to harvest colostrums sooner rather than later on your farm.

Source: Jerry Olson, Pfizer Animal Health

■ HEIFERS

Plenty of Heifers Around

Heifer numbers are at their highest level in 20 years, according to the U.S. Department of Agriculture's "Cattle" inventory report released on Feb. 2. The number of replacement dairy heifers stood at 4.31 million head on Jan. 1. That's an increase of 0.8 percent, compared with year-ago levels. And the percentage of heifers to the milking herd is the highest on record.

However, the number of heifers expected to calve in 2007 is down 2 percent from last year at 2.842 million head. High feed cost and poor profitability are expected to trim the size of the dairy herd, which means replacement-heifer prices likely will pull back slightly this year as demand eases.

Source: Greg Scheer, Doane Advisory Services

Pastured Heifers Benefit From Teat Sealant

Infusion of a teat sealant about 30 days before first calving reduced the risk of clinical mastitis after calving by 68 percent, according to a New Zealand study cited in the January *Journal of Dairy Science*. Infusion also reduced the risk of post-calving *Strep. uberis* infection by 84 percent. The 255 animals used in the study were from five seasonal-calving, pasture-fed herds. *Strep. uberis* is the most common cause of clinical mastitis in grazing herds in New Zealand.

■ HERD HEALTH

Teat Condition Scoring

Teat condition scoring is an effective udder health monitoring tool. The following are targets for levels of "abnormality" in a herd:

- *Color*: No more than 10 percent of cows with light-colored teats should have one or more teats that are visibly reddened (congested) or tinged with blue (cyanotic).
- *Swelling at or near the top of the teat*: No more than 10 percent of cows should have one or more teats with marked swelling or palpable rings.
- *Swelling and hardness at or near the teat end*: No more than 20 percent of cows should have one or more teat ends classified as firm, hard or swollen, or severely wedged.
- *Openness of teat orifice*: No more than 10 percent of cows should have one or more teat orifices classed as open.
- *Vascular damage*: No more than 5 percent of cows should have petechiations on one or more light-colored teats.

- *Teat-end hyperkeratosis*: No more than 20 percent of cows have one or more teats that are scored rough or very rough and no more than 2 percent very rough.

Source: 2005 NMC Proceedings, pg. 34-43 (Hillerton)

Cow Cleanliness

Cow cleanliness is a major determinant of both milking efficiency and the rate of intramammary infection. Cow preparation time is about doubled for cows that enter the milking parlor with dirty udders, resulting in reduced parlor throughput. Teat and udder cleanliness also is correlated with average somatic cell count.

Source: Evaluating Milk Performance, Bulletin of the International Dairy Federation 396/2005

■ NUTRITION

High-fiber, Low-energy Diets Fit Dry Cows

Sometimes less is more. And when the issue is far-off dry-cow diets, less energy may mean far better cow health at calving.

Recent research at the University of Illinois shows cows fed a low-energy far-off dry-cow ration had higher dry-matter intakes and energy balance and lower blood nonesterified fatty acid (NEFA) levels during the first 10 days after calving.

By feeding the less energy-dense straw total mixed ration (TMR), the researcher says, they were able to get dry cows to consume near National Research Council recommendations – about 0.6 Mcal NEL per pound of dry matter.

When cows were offered a typical far-off diet that included more hay and corn silage, they got about 60 percent more energy than required.

By lowering energy intake in the dry period, post-calving appetite may be improved, mobilization of body fat stores may be decreased and fat accumulation in the liver may be reduced, preventing development of fatty liver and subclinical ketosis.

If you do consider the low-energy diet approach, be aware of these caveats:

- The straw must be incorporated into a well-balanced TMR that provides adequate metabolizable protein, minerals and vitamins.
- Straw, corn stalks or other roughages must be chopped to a small, uniform particle length to prevent sorting. Particle size of straw should be less than 2 inches.

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- Cows need at least one week to 10 days to fully adapt to these bulky rations.
- No research has been done on whether low-quality hay can be substituted for straw. The flat, hollow stem and characteristics of the plant cell walls may make straw more conducive to mat formation in the rumen and to remain in the rumen longer.
- The Illinois research used straw only in the far-off diet. Close-up diets included chopped alfalfa hay and other ingredients to replace the straw.
- Diet is only part of transition cow success. Too frequent movement of cows into new groups can be problematic. University of Wisconsin research suggests cows should not be moved into maternity pens between three and nine days prior to calving.
- Overcrowding also can be a problem. Some field research suggests that close-up pen stocking density should be no more than 80 percent of available stalls.

Source: Dairy Today, pg. 22, December 2005

■ MISCELLANEOUS

Lines You'll Never Hear in a Western

- "I reckon I'll have me a half-caf double latte with a twist. IN A DIRTY MUG!"
- "Gentlemen, rather than get caught up in mindless reaction, let's draw upon our feminine selves for a more intuitive solution."
- "I'm tellin' ya, I ain't shot no varmints since them PETA fellers set me straight."
- "Guns? We don't need no stinking guns!"

Source: Author Unknown

■ FACILITIES

Parlor Planning Dos and Don'ts

This “top 10” list of parlor planning tips is provided for producers looking to build or retrofit their milking facility.

1. **Know how much you can spend.** Do a financial analysis of the operation. An unprofitable business cannot afford to invest anything. Debt equals risk; good dairy managers are good risk managers.
2. **Let the installer design the milking system.** Find a competent milking equipment dealer who knows all sanitary and safety regulations.
3. **Don't overestimate the value of old equipment.** If you're trying to save money by using old equipment, remember replacement parts can be hard to find and maintenance will be labor intensive.
4. **The first priority is getting the building right.** Buildings last for 50 years and are difficult to remodel. Equipment lasts 10 years and is easy to upgrade. If your budget is limited, spend it on a good building and upgrade equipment later.
5. **Plan building, stalls and holding area for good cow flow.** Minimize corners and turns cows will have to make whenever possible.
6. **If you remodel, rewire the barn.** Old barns (and many new ones) do not have adequate and safe electrical systems. Many utilities offer grants or low-interest loans to rewire barns.
7. **Put in good lights.** Lots of lights make a good work environment. Install energy-efficient lights when you rewire.
8. **Consider energy-saving technology.** Energy efficiency is a good investment, with a two- to six-year payback on variable-speed drive vacuum pumps and heat exchangers.
9. **Make sure floors drain well.** Beware of amateur concrete work. Wet floors make a slippery and unpleasant work environment. Floors should have a minimum slope of 0.25 inch per 10 feet.
10. **Put in good ventilation.** Two ventilation systems are required: one for winter to move air, remove moisture and add heat, and one for summer to move lots of air.

For details, visit www.uwex.edu/uwmril/milk_parlor/mpmain.htm.

Source: Douglas Reinemann, University of Wisconsin-Madison

■ MILK QUALITY

What's In Your Tank?

Since 1975, a shift has occurred in the importance of mastitis as being strictly a production-limiting disease to the fact that mastitis adversely affects the processing capabilities of milk and its suitability as human food, and does impact human health issues.

Striving every day for quality is no easy task. Even when you're doing most everything right, challenges do arise. None are more prevalent than udder health.

An effective, but underutilized, tool for monitoring your herd's bacterial organism status is bulk milk tank testing. I am referring to monthly bulk tank sampling to identify the predominant mastitis organisms in your herd. With a quick turnaround time and less cost than sampling individual cows, the tank sample provides a snapshot of what is going on in your herd.

By monitoring monthly, you can make your job easier. For example, do certain organisms become predominant in the summer versus the winter? Have you switched from dry sawdust to green? Oak to pine? Is your recycled sand clean enough? Are you dealing with environmental strep or contagious organisms such as *Staph. aureus*, *Strep. ag.* or mycoplasma? Have you switched teat dips?

Somatic cells counts are a great starting point, but until you know what you are dealing with at a herd level, how do you know you are treating with the most effective antibiotic? By knowing which organisms you are dealing with, you can make better management decisions.

You should take samples as aseptically as possible. Agitate the milk for at least 10 minutes and collect at least 2 ounces of milk from the top of the bulk tank using a sanitized dipper. Use either a flip-top container, like those used for Dairy Herd Improvement Association (DHIA) samples, or a Whirl-pak. Label and refrigerate samples IMMEDIATELY, then transport them to the lab on ice.

When troubleshooting a current problem, you need multiple samples; you should take three or four samples from different locations. Freeze the samples until they can be delivered to the lab. One thing to note – somatic cell counts cannot be obtained on samples that have been frozen. Using fresh rather than frozen samples also is best when testing for mycoplasma. Samples can be sent to the NDSU Diagnostic Laboratory or, in some cases, your

veterinarian for analysis. Cost usually runs between \$6 and \$10 per sample to test for basic mastitis organisms.

Bulk tank sample analysis should not be used to make treatment decisions. Use results from the bulk tank samples, along with monthly DHIA cell count data, if available, to identify which individual or groups

of cows to sample so you can make better choices on which treatment to use or which management practices need to be modified. With the volatility in the price of milk, can you afford NOT to monitor your bulk tank to stay ahead of problems?

Adapted from: S. Puffenbarger, VPI

Test Your Mastitis IQ

Just how much do you know about mastitis?

To answer that, here's a quiz Michigan State University's Veterinary School developed.

True or False.

1. Once a *Staph. aureus* cow, always a *Staph. aureus* cow.
 2. It doesn't pay to treat clinical mastitis.
 3. Stripping and oxytocin is the way to treat mastitis.
 4. Milk returns to normal whether I treat or not, so why treat.
 5. Infusion tubes aren't as good as in the old days.
 6. If one mastitis tube is good, two are better.
 7. Extra-label products are more effective.
 8. If after two treatments there still are clots and flakes, switch to a different antibiotic.
 9. First-generation cephalosporins and penicillins are effective for all mastitis.
 10. Without records, it is impossible to know if mastitis treatment is working.
1. False. *Staph. aureus* is difficult to treat, but not incurable. New infections have higher cure rates, and dry-cow therapy produces the best results. It depends on the severity and history. Chronic cases of clinical mastitis aren't good treatment candidates.
2. False. This approach isn't beneficial for all types of mastitis and has little value on clinical outcome. If clots or flakes make it difficult to eject milk, stripping is beneficial.
3. False. This isn't always true for strips and strips.
4. False. The problem isn't the drugs. It is a dairy's therapeutic regimen.
6. False. Doubling tubes only gains a half-life of effective concentration. Except for aminoglycosides and fluorquinolones, success depends on length of treatment, not dosage.
7. False. There are many disadvantages to extra-label products. They haven't been tested for mammary inflammation and don't have known withholding times. Intramammary infusion of extra-label products doesn't have a higher cure rate.
8. False. Switching drugs starts the therapeutic clock all over again and can lead to bacterial resistance. Extended therapy makes more sense than switching drugs.
9. False. Data show that only 50 percent to 80 percent of *E. coli* isolates from mastitis are susceptible to ampicillin.
10. True. You must know the causative agent and monitor clinical response. A good measure of mastitis control is whether you've discarded less milk from clinical mastitis this year compared with last year.

Source: Dairy Edge, December 2005

The answers.