

# DAIRY CONNECTION

Vol. 16, No. 4 December 2006

## EDITORIAL

Another year has come and gone. That means the time has come to start planning for the Dairy Cow College series of meetings held in conjunction with the Midwest Dairy Association winter district meetings.

The schedule is similar to past years, with a slight change in the rotation.

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Monday, Jan. 29	Linton – Emmons County Courthouse
Tuesday, Jan. 30	Dickinson – Elks Club
Wednesday, Jan. 31	New Salem – Morton County Fairgrounds
Thursday, Feb. 1	Minot – Sleep Inn
Friday, Feb. 2	Valley City – Eagles Club

The topics this year include breeding for health and fertility, crossbreeding, effects of heterosis, distillers grains for dairy cattle and the effect of ethanol production on dairy feed costs.

So in the immortal words of Roy Rogers and Dale Evans, "Happy trails to you until we meet again," and Merry Christmas.

Seasons blessings,



J.W. Schroeder, Ph.D.  
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Department of Animal and Range Sciences

## HERD HEALTH

### Prevent winter teat problems

Temperature and wind are major predisposing factors to winter teat changes. As such, the No. 1 objective to prevent and control winter teat problems is to control exposure to these weather factors.

The second objective should be to minimize other teat stressors that exacerbate the problem if cracking or freezing occurs.

The third objective is to keep the teat disinfected, healthy and soft as much as possible through proper milking procedures.

The final objective is to minimize secondary bacterial infections through proper milking practices and environmental sanitation.

Source: *Teat Problems Caused by Winter Conditions: What Have We Learned.* Leo Timms, Iowa State University

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## Fresh advice on fresh cows

One of our favorite recommendations is to take a California Mastitis Test (CMT) of every cow that freshens. Routine use of the CMT is one of the best ways to improve milk quality, reduce bulk tank somatic cell counts and reduce clinical cases of mastitis.

The CMT detects subclinical mastitis. Subclinical mastitis is the mastitis you can't see that raises the somatic cell count (SCC) in the bulk tank and often develops into clinical mastitis for individual cows. When you apply the CMT to fresh cows, you find out early which animals are contributing to bulk tank SCC levels and those most likely to get clinically ill.

Perform the CMT about three days after freshening. That's when you're screening for residues and handling the cow as she transitions into the full milking string. Squirt milk from each quarter into the CMT cups, add an equal amount of the reagent, swirl and watch. If the mix thickens, you have identified an infected quarter.

Once you have identified infected quarters, collect a sample for culture. The CMT can't tell you which mastitis pathogen you're facing but the culturing will. When you know the nature of the mastitis challenge, you can make informed decisions about proper treatments and management practices.

Use of the CMT is a simple, inexpensive and effective means for identifying infected quarters and helping you focus on the proper approach to milk quality management. For more information, check out [www.uwex.edu/milkquality/](http://www.uwex.edu/milkquality/).

*Source: Mike Maroney, DVM, University of Wisconsin Dairy Science*

## ■ FORAGES

### Silage density

Although it's too late to change for this year, it's never too late to evaluate your effectiveness at storing forage, especially packing core silage.

Forage quality is one of the most important factors affecting the level of milk production.

Some of the factors affecting forage quality, such as weather, are outside of our control. Other factors, such as forage variety, proper planting and

harvesting time, can be controlled. Silage density through proper silo packing is another of the factors that can be controlled.

After getting a good crop harvested, ensuring it is properly stored is extremely important. Proper packing to ensure good silage density also is extremely important. Silage density in a trench or bunker silo is related to many factors. These factors include forage dry matter, packing time, weight of the tractor and silo filling rate.

Good silage density is important for many reasons. Oxygen is the enemy of good silage fermentation. The more densely packed the silage is, the less oxygen that will be present. Dry matter loss greatly increases as silage density goes down (see table).

One method to see how good a job you are doing packing silos is a special corer. By taking samples from various places in the silo, you can calculate silage density.

### Corn silage dry matter loss in bunker silos.

Silage Density	Dry Matter Loss at 180 days
lbs DM/ft <sup>3</sup>	(%)
10	20.2
14	16.8
15	15.9
16	15.1
18	13.4
22	10.0

Table. Ruppel et al, 1992 JDS

*Source: Vol. 27. Dairy Pipeline*

### Roundup Ready alfalfa doesn't affect milk production

Dairy cows fed Roundup Ready and nongenetically modified alfalfa performed identically in a University of Wisconsin study. Researchers Dave Combs and G.F. Hartnell report no differences in milk production, milk composition, feed intake or feed efficiency for cows fed the two types of alfalfa. The research was presented at the 2006 American Dairy Science Association – American Society of Animal Science meeting in Minneapolis.

## ■ MANAGEMENT

### **Shorter dry period reduces colostrum volume**

Colostrum quantity declined in cows given a reduced dry period, according to research from Cornell University. Cows given a 40-day dry period gave an average of 15 pounds of colostrum at the first milking – 4 to 5 pounds less than cows given a 60-day dry period.

However, dry period length did not reduce colostrum quality. Colostrum immunoglobulin G levels averaged 77 milligrams per milliliter for both treatment groups. Fifty milligrams per milliliter or higher is the desired goal.

### **Have we changed heifer growth curves by selection for higher production?**

Dairy farmers have been selecting for higher production long enough that several “correlated responses” have appeared in dairy cows. For instance, experience and data have taught us that somatic cell scores go up and fertility rates go down if selection is only for higher milk yield for several generations.

The industry responded by developing genetic evaluations for somatic cell score and daughter pregnancy rate. Selection for lower cell scores and higher fertility, in conjunction with higher yields, is turning the tide of genetic change in a favorable direction for these two traits. Higher producing cows have increased appetites and tend to be more aggressive eaters. Does this characteristic affect their growth rates as heifers?

A long-term study at the Scottish Agricultural College in Edinburgh,, compared Holsteins selected for maximum production of fat and protein to controls selected for average production.

Heifers in the maximum production line grew faster and were heavier at first calving than heifers in the control line. The size differences disappeared by the end of third lactation, however. So researchers found a correlated response to selection for higher yields, as growth rates and size at first calving have increased.

Most producers would consider these to be favorable responses. However, the changes call attention to the need for better nutritional programs to meet

growth requirements than were necessary a few generations ago.

The dairy cow of today is a highly specialized beast and requires increasingly specialized management systems to reach full genetic potential, even as a heifer.

*Source: Journal of Dairy Sci. 89:322-329*

### **Tips for keeping your farm safe and secure**

The U.S. Department of Agriculture recently released an agricultural security publication that includes checklists for operations with crops, chemicals, livestock, poultry and dairy. It emphasizes the importance of security awareness, emergency planning and general security issues. These issues also could be called best management safety practices for the farm since they address safety awareness tips such as:

- Keep chemicals in original containers and in a locked facility.
- Have an emergency operation plan.
- Post emergency phone numbers for fire, police, veterinarians, etc.
- Maintain an inventory of fuel (diesel, gas, propane, acetylene, kerosene).
- Properly train employees how to operate equipment/react in an emergency.

The Pre-Harvest Safety Security Guide can be downloaded from the USDA Homeland Security Office Web page at [www.usda.gov/homelandsecurity/](http://www.usda.gov/homelandsecurity/).

## ■ MILK QUALITY

### **Four actions for milk quality**

According to Mike Maroney, DVM, University of Wisconsin Extension, dairy producers should think about four actions: forestripping to stimulate milk letdown and examine milk; clipping or singeing udders to improve udder hygiene; using plastic gloves during milking to reduce bacterial transfer; and keeping good mastitis records.

These four procedures are big differences between herds with high somatic cell count (SCC) and those herds with low SCC. Other differences occur, too, such as milker training, written routines and single-use towels, among other things.

Yet, data shows forestripping, singeing or clipping udder hair, using gloves during milking and maintaining good records have the biggest statistical differences. Dairy producers who use the big four tend to produce higher quality milk than those who don't.

If you start forestripping, singeing udders, wearing gloves and keeping records, odds are you also do some of the other little things that help reduce SCC and clinical mastitis.

### Relationship between linear score and milk loss

We all understand that the lower the somatic cell count (SCC), the lower the incidence of mastitis and the more money received for premiums, depending on the processor. Did you know that the higher the SCC, the less milk is produced? The following chart shows linear score, SCC and pounds of milk lost/day and per lactation.

Linear score	SCC range (1,000 s/mL)	Milk loss (lbs/day)	Milk loss (lbs/lactation)
0	0-18	0	0
1	19-35	0	0
2	36-71	0	0
3	72-141	1.5	400
4	142-283	3.0	800
5	284-565	4.5	1,200
6	566-1,130	6.0	1,600
7	1,131-2,262	7.5	2,000
8	2,263-4,523	9.0	2,400
9	4,524-9,045	10.5	2,800

Bottom line. Reducing somatic cell count increases the amount of saleable milk.

*Reference: DHI Glossary, December 2005.  
Dairy Records Management Systems*

## ■ CALVES AND HEIFERS

### Thawing colostrum

Thawing procedures for frozen colostrums have been debated for years. Ohio research (Jones, L.R. et.al., J. Dairy Sci. 70:1941) sheds some light on the controversy of the use of microwave ovens for thawing colostrum. They compared the results of thawing colostrum in a microwave in 10 minutes at 650 watts, microwaving for 17 minutes at 325 watts and 25 minutes of thawing while submersed in 113 F water.

Results of the experiment indicated that neither the concentration nor amount of immunoglobulin G or immunoglobulin M was affected by microwaving. However, both the amount and concentration of immunoglobulin A were higher using the water-thawed method.

The researchers concluded that using a microwave to thaw colostrum could be done effectively. However, caution should be observed because newer microwaves range in power from 400 watts to 1,200 watts. When in doubt, the best way to thaw colostrum remains the warm-water thaw.

### Conventional or "intensive" feeding program for calves?

As I travel around the United States, this issue continues to be a hot topic. Old habits die hard and the tradition of limit feeding calves to encourage early weaning has made a lot of sense. Well-designed research trials showed that limiting milk intake to about a pound of dry matter per day encouraged early calf starter intake, which fostered early weaning. However, research in the 1990s at Illinois and Cornell showed advantages to more liberal feeding policies. What should a producer do? We have been ingrained into thinking we have only one way to do something. Successful dairy managers know that every management decision made on the farm is a matter of weighing the benefits, cost and risk in light of their resources and management ability.

Calf managers should look at this issue and consider the following before deciding their course of action.

Here are the pros and cons for conventional programs that involved feeding limited quantities of milk or milk replacer to their calves.

- The programs encourage earlier calf starter intake and weaning.
- Incidence of diarrhea tends to be lower. Is it due to lower dry matter intake from milk or milk replacer or early starter intake?
- Feeding limited liquid diets probably involves less labor, particularly if early weaning is practiced.
- Success depends on providing an excellent environment (dry and draft-free) and high quality labor. Locating where winter temperatures don't drop too low and moisture is not excessive also is more attractive for dairies.
- The biggest advantage is the low cost involved with feed and labor.
- The biggest downside is probably greater risk of death and disease. When the weather turns cold or calves get sick, they have less body reserves of energy and protein.

An **intensive calf rearing program** that involves feeding up to 2.5 pounds of dry matter from milk or milk replacer/day has its benefits and added costs, too.

- This feeding program is very logical. What other species' feeding programs involve limit feeding the neonate? I don't know of any! When have you seen a very young animal that was lacking body condition and considered healthy? Do we limit feed our children?
- The added body fat in the more heavily fed calf provides a source of energy when the weather turns cold or the calf becomes ill due to infectious diarrhea or pneumonia. Field studies conducted with dairies using the two systems simultaneously revealed much lower mortality when calves were more liberally fed. It's also a likely reason that some calf growers abandoned milk replacers and switched to feeding whole milk.
- Preliminary research suggests that intensive feeding programs promote greater development of mammary secretory tissue.
- The greatest deterrent to adopted intensive feeding programs is cost. Intensive milk replacers

cost more per pound due to their higher nutrient content and because frequently more pounds are fed per day. Calf starter intake may be delayed, particularly if fresh water is not provided daily.

Each decision involves evaluating the resources and the priorities for your herd. However, with the higher value of replacement heifers, justifying more liberal feeding programs is easier.

*Source: Bob James, Extension Dairy Scientist,  
Virginia Tech Department of Dairy Science*

## When to start breeding heifers

Not sure when to start breeding heifers? Heifers should achieve these milestones before you start breeding them:

- Sexually mature, with two or more estrous cycles completed since puberty
- At least 12 months of age
- Have attained 55 percent to 60 percent of mature body weight; in Holsteins, that is about 800 pounds
- Have achieved adequate frame size; in Holsteins, this equates to a wither height of about 49 inches.

## ■ BIOSECURITY

### Vigilance is key

As bioterrorism becomes a real threat, producers are urged to follow common sense and follow basic steps to help maintain security.

All operations should maintain the priority of keeping their employees safe. Nothing is more important. All operations should re-evaluate their physical safety and security. All operators should talk to local law enforcement and emergency services to get their best advice. All operators should sit down with their employees to make sure they understand the company's priority on employee safety and facility biosecurity.

Large commercial operations should invest in a professional plan to maintain or enhance the security of their facilities and the safety of their employees. Smaller operations can do good, sound planning.

*Source: Animal Agriculture Alliance newsletter*

## **National animal identification system (NAIS)**

Many of you are aware that the Professional Dairy Heifer Growers Association has paired up with five other national dairy organizations to encourage producer members of the dairy industry to obtain a premises ID number. This is the first step in a progression of events that must occur to put together our NAIS.

Many reasons have been stated for establishing a national ID system and you have heard them before. Here's reason to consider it.

A vaccine production facility needs the necessary raw materials for growing bacteria to make bacterins, such as blackleg and leptospirosis. Two of these are amino acids and peptones. These are made by enzymatic digestion of hamburger. During the bovine spongiform encephalopathy (BSE) scare, proving that the hamburger used to make this media ingredient originated from meat from BSE-free locations became very hard because of a lack of an efficient and reliable animal ID system in this country. This lack of verification could shut down our animal health companies' ability to export their products, as well as prove to their U.S. customers their products were made from safe ingredients.

I had never thought of this ramification before, and I'll bet you probably haven't, either. Many things have to be worked out before we have a workable system in this country. Some of those things will require a scientific solution and others will require a political one. While those details are being solved, one thing is for sure. We will need all of our livestock facilities identified. Take a look at the Idairy Web site ([www.idairy.org](http://www.idairy.org)) to help you in your decision as to whether to sign up.

## **LABOR**

### **Tips for managing a multicultural work force**

Alvaro Garcia and staff from Hilltop Dairy (Brookings, S.D.) made the following points during their session presented at the dairy convention at the end of November.

Instead of focusing only on differences between cultures, we need to focus on what we have in common, too. Building on those commonalities can help you motivate and lead your organization.

For example, Hispanics and Anglos have much in common:

- Family oriented
- Came to this country as immigrants
- Seek peace in the world
- Have faith and traditions
- Want a better future for their children
- Have customs, celebrations and symbols in life
- Enjoy learning about the cultures of the people they meet

## **GENETICS**

### **Dairy crossbreed – new or taboo?**

What do you get when you put on a dairy program and you talk crossbreeding? Lots and lots of discussion. At least that's what occurred when Les Hansen gave his presentation at this year's joint dairy/pork convention (and animal sciences seminar). The presentation stirred things up – in a good sort of way.

Interest in crossbreeding dairy cows has grown during the last few years. Frustration with the Holstein breed and its declining fertility, calving ease, general vigor and length of productive life has led some enterprising producers to crossbreeding in the hope of gaining hybrid vigor. Hybrid vigor/heterosis is defined as the change expected from the resulting cross as compared with the average of the parents. Although conventional wisdom developed several decades ago from university research indicated minimal hybrid vigor for milk production, fairly significant heterosis was recorded for many livability traits.

Contrary to past documentation, recent research, although limited, has documented 57 percent heterosis potential for milk production. In addition, advantages for fertility as measured by length of calving interval, calf survival and lower culling advantages, also have been documented in the range of 7.5 percent to 15 percent for each trait. The limited recent research information has come from the USDA (Dairy Herd Improvement Association), the University of Minnesota and field

data from commercial dairy herds in California. The University of Wisconsin has a trial under way in the very early stages.

The USDA is reporting increases in heterosis for a somatic cell score (SCS) of 0.02 unit, productive life of 0.3 month and daughter pregnancy rate of 1.8 percent on average for crossbreds over Holsteins. They also report estimates of about \$200 in hybrid vigor for net lifetime profit such that Jersey-Holstein and Brown Swiss-Holstein crosses can exceed pure Holsteins by \$113 and \$79 per cow, respectively, in a cheese yield market.

However, the University of Minnesota, with the longest running research trial to evaluate crossbreeding, has produced slightly different initial results. When comparing the performance of F1 Jersey X Holstein with straight Holstein cows, combined fat and protein yield for the crossbred cows was 3.5 percent below the straightbreds with no difference in feed efficiency, as defined by combined fat and protein yield divided by dry matter intake. Early data from the UW-Madison trial compares ¾ Holstein-¼ Jersey calves to straight Holstein calves. The crossbreds are more vigorous and have greater immunity to calfhood diseases, but are also much more variable in body weight and age at puberty.

The field data from California summarized by University of Minnesota researchers compared Normande-Holstein, Montbeliarde-Holstein and Scandinavian Red-Holstein cows to Holstein cows. Crossbreds excelled over Holsteins in survival rate during first lactation, calving ease/stillbirth and days open during first lactation. Holsteins outperformed crossbreds in combined fat and protein production by 2.2 percent to 8.6 percent per lactation, with Scandinavian Red and Montbeliarde crosses ranking second and third, respectively.

Kent Weigel, UW-Extension dairy geneticist, has reached the following conclusions from the above information: Calving ease, stillbirths, female fertility, milk composition and longevity can be improved with crossbreeding, but these improvements will come at the expense of milk volume. Variation between animals is the enemy, especially in second and later generations. He recommends

that producers who crossbreed their cows select bulls from breeds with large cow populations and efficient sire selection programs. Crossbreeding is not a substitute for genetic selection; top artificial insemination sires should be chosen from each breed.

So we have some early research results on production and health traits. What effect does all this have on profitability? Since we don't yet have economic field data, Bruce Jones developed an economic model to factor all of the pluses and minuses into returns during the lifetime of the cow. Considering a milk pay price for Holstein milk of \$12.56 and \$14.64 for Jersey milk/hundredweight, returns per lactation for the Jersey are \$180.85, for the Holstein \$217.50 and for the Jersey-Holstein the return is predicted right in the middle at \$199.17. Past work has clarified that high component milk is most competitive during periods of low milk price. This is a very interesting model to perform the "what if" scenarios and is available for your use if interested.

**Breed average merit and heterosis. USDA animal improvement programs laboratory, 2005.**

Breed	Net merit	Cheese merit	Fluid merit
Ayshire	-\$255	-\$235	-\$364
Brown Swiss	-\$178	-\$128	-\$404
Guernsey	-\$381	-\$346	-\$559
Jersey	-\$153	-\$93	-\$433
M. Shorthorn	-\$446	-\$431	-\$537
Holstein	0	0	0
Heterosis	+\$197	+\$207	+163

Crossbred field data from California  
Les Hansen, Brad Heins and Tony Seykora, University of Minnesota

**First lactation 305-day production (2X), by breed of cow.**

	Holstein	Normande x Holstein	Monbeliarde x Holstein	Scandinavian Red x Holstein
Milk (lb)	21,511 lb	18,806 lb	20,197 lb	20,461 lb
Fat (lb)	763 lb	763 lb	736 lb	750 lb
Protein (lb)	673 lb	610 lb	646 lb	655 lb
Deviation from Holstein combined fat + protein		-8.6%	-3.8%	-2.2%

The bottom line on crossbreeding likely will not be known for some time to come. Early results are like most, somewhat erratic and conflicting. Perhaps

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about all that can be concluded so far is consistent with Weigel's conclusions above. Crossbreeding likely improves health, reproduction and livability traits even though milk production and profit per animal may be lowered. Profit isn't everything, and some differences in labor or management "headaches" may not show up in the bottom line. If your quality of life improves enough to offset a modest decline in income, crossbreeding may be for you. The real challenge seems to be what to do after the first cross is made to maintain heterosis and avoid variability. Time will tell.

*Source: K. Bolton. Extension Dairy/Livestock Agent. Jefferson County, Wis.*

## ■ MISCELLANEOUS

This Christmas, electronics is reported to be the top seller. When you sit around the tree opening gifts and your youthful generation starts using the techno-babble language, don't confuse these words with our new "traditional" country folk definition.

LOG ON ..... Making a wood stove hotter  
LOG OFF ..... Don't add no more wood  
MONITOR ..... Keeping an eye on the woodstove  
DOWNLOAD ..... Gettin the far-wood off the truk.  
MEGA HERTZ..... When yer not keerful gettin the farwood  
FLOPPY DISC ..... Whatcha git from tryin to carry too much farwood  
RAM..... That thar thing whut splits the farwood  
HARD DRIVE ..... Gettin home in the winter time  
PROMPT ..... What the mail ain't in the winter time  
WINDOWS ..... What to shut when it's cold outside  
SCREEN ..... What to shut when it's blak fly season  
BYTE ..... What dem dang flys do  
MICRO CHIP ..... What's in the munchie bag  
MODEM ..... Whacha did to the hay fields  
LAP TOP ..... Whar the kitty sleeps

*Author unknown*