



NDSU EXTENSION SERVICE

DAIRY CONNECTION

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EDITORIAL

Proud of your profession?

Americans recognized the value of the nations dairy farmers by ranking them third among the top three professions based on their contribution to society. Only teachers (89%) and doctors (89%) ranked above dairy farmers (74%). Why dairy farmers?

“Many dairy farmers are involved in their hometowns and are respected as leaders who take as much pride in their hometowns as they do the land they farm and the high quality, nutritious products they make,” according to Dairy Management, Inc. who commissioned the survey with the National Milk Producers Federation.

Although we live in an urban society, the survey indicates 68% have been on a dairy farm and 59% claim to be fairly knowledgeable about dairy farming. However, only 35% of Americans realize that 99% of the nation’s dairy farms are owned by families.

So, the survey says dairy producers should be proud of what they do.

Speaking of patriotism...

It is indeed refreshing to see the resurgence in faith and country. Unfortunately the events of 9-11 (September 11, 2001) were the result of a huge and irreplaceable cost in human life. As we enter the Christmas Season, blessings to you all; we indeed do have much to be thankful for and proud of.

J.W. Schroeder
Ext. Dairy Specialist

MILK QUALITY

Bulk tank milk cultures can provide useful information

Bulk tank milk (BTM) culturing is based upon limited scientific data; however, BTM culturing can supply two important types of information: 1) presence or absence of a bacterial group, and, 2) identification of predominant bacterial groups in BTM.

The more often BTM is sampled, the more useful the information. Samples taken over consecutive days or weeks are most useful. Extreme caution should be taken when interpreting results from a single BTM sample.

The first question to ask when interpreting BTM cultures is whether or not the samples are positive for *Streptococcus agalactiae*, *Staphylococcus aureus*, or *Mycoplasma spp.* Presence of these pathogens in BTM almost always indicates the presence of infected quarters in the herd. However, negative culture results do not necessarily mean that the herd is negative for infections caused by these pathogens.

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Another question that can be answered is “What are the predominant bacterial groups in the BTM sample?” Bacterial isolates from BTM are typically a heterogeneous mixture of various taxonomic and ecological groups. Theoretically, any bacterial isolate from BTM could arise from an intramammary infection. The probability of an isolate originating from a mammary infection is dependent of the bacteria. For example, coliforms and environmental streptococci may originate from mammary infections, but more common sources of elevated counts caused by these bacteria are milking wet udders, organic soil in milk lines, cracked inflations, inadequately heated wash water, and inadequate cooling of milk.

A note of caution: BTM cultures are not useful as indicators of mastitis prevalence in a herd. Bulk tank milk cultures can be valuable supplements to quarter milk samples, but never a substitute for determining infection incidence and prevalence based on quarter milk samples.

NMC publication: Laboratory Handbook on Bovine Mastitis, pg. 171 (1999)

Steps to prevent added water

According to Federal and State regulations, addition of water in any amount constitutes adulteration of milk. Even when milk meets minimum total solids, solids-not-fat, and fat levels, it is considered adulterated if it contains added water. In addition to legal requirements, there are also economic factors relating to reduced product yield and quality, decreased shelf life, and off-flavor development. The Dairy Practices Council recommends the following steps for avoiding the addition of water to milk at the farm level:

- Properly install milking systems to permit good drainage. Joints and gaskets should have a smooth inner surface. Slopes for permanent lines should be at least one to two inches per 10 feet.
- Use proper procedures for washing and drying udders and teats. Milk clean, dry teats.
- Before rinsing, washing or sanitizing pipelines, disconnect the fill pipe from the bulk tank. Swingline or fill pipe position switches are strongly recommended.
- Be sure that weigh jars and receiver jars fully drain after the washing and sanitizing steps and that all transfer pipes and the milk pump drain prior to milking.
- Do not dip milking units in water or sanitizer once milking has started unless the vacuum to the unit is off.
- Never attempt to remove residual milk (“chase milk”) with water, in any type of milk transfer system.
- Extreme care must be taken when attempting to wash off the outside of a bulk tank containing milk. Avoid any practice that may cause water to splash under the covers or porthole lids.
- Leave the bulk tank valve open after washing and sanitizing to let solutions drain before adding milk.
- Prevent frosting of the inside of the bulk tank by not turning on the refrigeration until milk reaches the level of the agitator paddle (or follow manufacturer’s recommendations).
- In Transfer Stations disconnect all transfer pipes or hoses from the bulk tank during all rinsing and washing cycles. A warm air dryer should be used daily on all plastic hoses which are more than eight feet long.

Source: Guidelines for the Prevention of and Testing for Added Water in Milk. Dairy Practices Council, July 2001

HEIFERS

Accelerated calf growth programs

Over a year ago a major milk replacer company began to promote accelerated calf growth milk replacers, feeding 2-3 pounds of milk replacer powder per calf per day with 26-28% crude protein. Other companies will follow in promoting this feeding concept.

The old system of feeding calves 1 pound of milk replacer powder per day is now considered a marginal nutrition program and is believed to be responsible for unthrifty calves especially during periods of environmental stress.

The new NRC calf feeding section technically supports the new feeding program. Research conducted by Jim Drackly, University of Illinois, indicates the new feeding programs are normal to calf nutrition needs and growth rates. Pat Hoffman, University of Wisconsin Extension dairy scientist, has the following analysis of accelerated calf growth feeding programs:

- 1) The research on accelerated calf growth programs is solid but needs further study on long-term problems and benefits.
- 2) When feeding 2-3 pounds of milk replacer per day, the milk replacer crude protein content needs to be 26-28% to supply the increased demand for body protein accretion. Remember, whole milk is 27% crude protein on a dry matter basis. The most “growthy” March calves shown at the county fair were fed whole milk at higher levels for three to four months.
- 3) Do not use regular milk replacers (i.e. 20% crude protein and 20% fat) and increase the feeding rate. They could be deficient in crude protein.
- 4) Calves wean fine when fed these levels of milk replacer for five to seven weeks. Cut the amount of milk replacer back over a one-week period and calves will quickly increase their starter intake.
- 5) Starters may need to be higher in crude protein (20-22%) to accommodate the faster growing calves.
- 6) Rumen development is not affected on these programs if fed correctly.
- 7) There have been no reported cases of increased scours or health problems. Calves, however, will have loose stools, which may be of concern to some dairy producers.
- 8) Levels of drug intakes such as coccidiostats have to be carefully monitored because calves will eat different levels of milk, dry grain, etc. Drug feeding needs to be tailored to these programs.
- 9) Fat levels in the milk replacer should be 18-20%. Feeding extra fat or supplemental fat in the winter on these programs is a moot point because milk replacer is now being fed at levels significantly above maintenance.
- 10) Despite marketing claims, there is no data to support long term benefits such as reduced calving age or increased first lactation milk yield, etc.
- 11) Potential long-term problems of these milk replacer feeding rates have not been tested. For the most part, these products have entered the market before long-term trials have been conducted and it is unknown if there are any long-term negative effects.

12) Feeding 2-3 pounds of milk replacer is more expensive than the traditional 1 pound rate. An economic analysis of limited value until the long-term studies prove economic benefit.

In summary, it is important to understand our calf feeding programs for the last 30 years have been based on the “cheapest method possible.” We have now learned this is not the best calf feeding program. The new 2001 NRC recommendations and these new milk replacer feeding programs are no doubt based on better nutritional information. However, the long-term economics, benefits and faults of these changes have yet to be determined. These programs probably won’t be for everyone. Producers will still choose calf feeding options for different reasons - price, performance and health.

■ EQUIPMENT

Automatic Take-Offs

Recent advances have made ATOs very reliable. ATOs have a milk flow sensor that can be mechanical or electronic. ATO’s in stall barns or flat parlors reduce the number of deep-knee bends by one (25%) and can increase operator comfort and efficiency. In addition, the ATO can increase cows milked per operator per hour and reduce over-milking.

Over-milking can lead to an increased SCC but will always lead to a longer milking time. Over-milking increases milking time in two ways, obviously by having the unit on longer but also training the cow for slower milk letdown. Numerous studies have shown a correlation between over-milking and slow milk flow.

During machine milking, the flow from the normal udder does not occur at a constant rate. After the unit is attached, the flow rate increases and will reach peak flow rate in 30-60 seconds, which is generally maintained for about two minutes. Milk flow rate then decreases gradually. Average milk machine on-time is usually less than six minutes per cow with an average flow of 5 to 6 pounds per minute.

Machine-on time generally increases for higher producing cows and flow rates are similar for most normal teat ends on all breeds of cows. A consistent milking procedure can easily be achieved by having ATOs in your milking system and consistency can help train cows for faster milk let down and a higher flow rate.

According to Doug Reineman, UW-Extension milking engineer specialist, ATO removal rates are usually farm specific. For example, 3x milking will have a higher flow rate for detachment to reduce impact on the teat end due to more frequent milking. However, a typical setting for detachers is 0.5 lbs. per minute for 2x milking and may increase to 1 pound for 3x milking. This is a good average number to start with. If pounds per milking drop as the flow rate is increased for detacher removal, you have gone too far. When changing flow rate settings, limit changes to ¼ pound per minute to give cows a chance to adjust. If flow rate for removal is too low, cows are over-milked and teat-end damage will occur. Under-milking with too high a detacher removal setting will result in lower milk yield per cow and may cause SCC to increase.

Recent studies with flow rates as high as 2.5 lbs. per minute (Minnesota) and 1.4, 1.5, 1.6, 1.7, and 1.8 (Pennsylvania) for detacher removal did not find a significant difference in SCC. Pennsylvania did get a reduced yield of 1.5 lbs per cow per milking meaning their removal flow rate was too high. The Minnesota study suggested that a higher flow rate reduced milking time while having no effect on milk yield (all milked 3x). In these two studies, milking time was reduced. More studies need to be done to verify these findings but many producers have increased flow rate takeoff settings and improved cow flow and milk production.

The bottom line is that the time for ATOs may be right. Costs have fallen on many models and reliability is very solid. All types of barns and setups can use ATOs and given that they can help your bottom line and perhaps your health (fewer deep knee bends) ATOs could be a good investment for your dairy operation.

Vance Haugen, UW-Extension

■ MANAGEMENT

Job motivation factors differ

Work performance is highly dependent on job satisfaction. By understanding what provides job satisfaction, an employer can provide the motivation that workers need and desire.

To gain a greater understanding of motivation, Dann Bolinger, extension dairy agent in Michigan’s Clinton and Gratiot counties, recommends an employer begin by evaluating the basic factors that motivate your workers.

In a recent study, summarized in the July 2000 Michigan Dairy Review, employers and employees each ranked factors they believed led to job satisfaction. The most interesting finding from the study was not so much the actual rankings, but the discrepancy between employee and employer rankings (see Table).

Job motivation factors as ranked by employees and employers.

Employers Factor	Employees Rank	Rank
Interesting work	1	5
Appreciation/recognition	2	8
Feeling “in on things”	3	10
Job security	4	2
Good wages	5	1
Promotion and/or growth	6	3
Good working conditions	7	4
Personal loyalty	8	6
Tactful discipline	9	7
Help with problems	10	9

Source: July 2000 Michigan Dairy Review

The employers tended to put the greatest emphasis on the tangible or physical factors that are relatively simple to measure, such as money. Psychologist Frederick Herzberg called these items maintenance factors. Maintenance factors are job characteristics — wages, job security, working conditions — that must be met at a minimal level or job satisfaction will be reduced. Generally, maintenance factors alone cannot motivate workers. In contrast to employers, the job related factors ranked high by employees tended to be less tangible, more self-esteem related factors.

Herzberg called these items “motivators” or “satisfiers.” They included interesting work, recognition, appreciation, advancement and promotion; a sense of success, responsibility and trust; and professional growth. For best results, ask an independent third party to conduct the job satisfaction survey for you.

■ BIOSECURITY

Biosecurity fact sheets on-line

Two new fact sheets are available to help you enhance biosecurity measures on your dairy:

(1) “Disinfection in On-Farm Biosecurity Procedures” provides information to help you choose the proper disinfectants for use on farm. It also contains information about several commonly used disinfectants. (2) “On-Farm Biosecurity:Traffic Control and Sanitation” answers some frequently asked questions about biosecurity. It also offers precautions to take when allowing visitors at your dairy.

The fact sheets are available at the Ohio State University veterinary preventative medicine web site, located at:
<http://ohioline.osu.edu/vme-fact/index.html>

Speaking of Internet, I’ve recently updated my website, URL:<http://www.ag.ndsu.nodak.edu/aginfo/dairy>. Give it a look but bear with me, it’s still under construction. So while I’m updating, now would be a good time to offer suggestions that would improve its usefulness to you.

■ EDUCATION

Cow College 2002

Michael Looper, extension dairy specialist at New Mexico State University, will join me on the Cow College program this year. While information is forthcoming, here’s a quick look at the schedule and topics. All sessions will begin at 11 a.m. local time.

Date	Town	Location
Mon, Jan. 28	Linton	Emmons County Courthouse
Tues., Jan. 29	Dickinson	Knights of Columbus
Wed., Jan. 30	New Salem	New Fair Building
Thurs., Jan. 31	Minot	Holiday Express
Fri., Feb. 1	Jamestown	Eagles Club

Highlighted Topics

Responsible Marketing of quality dairy beef
Role of comfort in milk quality
Composting of animal wastes
What’s new in southwestern U.S. dairying
Dairy research at NDSU