

DAIRY CONNECTION

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EDITORIAL

If you looked at the dairy numbers lately, it's quite revealing. With about 537 farms permitted to sell milk and an estimated 43,000 cows statewide, there are questions being asked about the future of our dairy industry. Until now I've defended that the state is in transition, anticipating that we have leveled out. However, the recent drop suggests that we're not done yet!

As you view this quarter's newsletter, think about how our industry will look in 10 years. Do you like what you see? Then ask what should or could be done to make it a better future. People from NDSU Extension, the Animal and Range Sciences Department, North Dakota Department of Agriculture and others are doing strategic planning and welcome your input. Take into account that there are bright spots as well that include some recent experiences by existing North Dakota producers. It's good to see their optimism. As evidenced at the recent Value-Added Agriculture Summit in Mandan in January, the time is right for growth.

Thinkspring.



J.W. Schroeder
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INDEX

EDITORIAL	1
REPRODUCTION	1
Can we breed cattle once daily?	1
NUTRITION	2
Cows eat pounds not percentages	2
HEIFERS	2
Getting calves off to a good start	2
BEEFQUALITY	3
Beef quality issues to quality milk producers	3
HERD HEALTH	3
Reduce mastitis by counting bugs	3
Proper bulk tank/ milk line collection	4

REPRODUCTION

Can we breed cattle once daily?

Virginia Tech reported a study with 7,240 services in 168 herds which indicates no difference in breeding cows on a once a day schedule compared to the traditional AM-PM rule. Once a day breeding would be much more efficient for producers (especially when breeding heifers that are generally located away from the barn or office). However, the traditional AM-PM rule has proven itself reliable in most cases. Do we fix something that is not broke?

In Tennessee, several research studies were conducted to determine the effect of inseminating cows and heifers once a day or according to the AM-PM rule. Animals were bred on standing heat using the AM-PM rule on even days of the month. On odd days of the month, animals were inseminated once a day between 8 A.M. and 12 Noon. Heats were detected two to three times per day. Pregnancies were determined 60 to 80 days after insemination by rectal palpation for those animals that did not return to heat or by ultrasound after 30 days. No difference was found between the two techniques. In one study, a total of 60.5 percent of 172 Jersey cows and heifers bred by the AM-PM rule were pregnant versus 57.6 percent of 165 bred only in the morning. Furthermore, a total of 51.8 percent of those animals bred the morning they were in heat were pregnant. In a second study, an additional 292 Holstein and Jersey heifers were inseminated. A total of 63.9% of 166 heifers bred according to the AM-PM rule were pregnant versus 61.9% of 126 bred once a day in the morning. No significant difference was found between once versus twice per day artificial inseminations.

Once a day artificial breeding done in the morning can be used effectively. Optimize heat detection and conception rate management techniques. This doesn't mean once a day heat

detection. Heats must still be detected 2 to 3 times a day for more than 15 minutes per observation. Moving animals prior to observation helps. Animals are more active on dirt than concrete. Feeding and milking times are not the best time to watch animals for heat. Use prostaglandins to bring groups of animals in heat together and increase heat activity.

Before you give once a day breeding a try, look at your conception rate, average days to first service and percent heats observed on DHIA, and make sure you do not need to improve in those areas first. Then if it will help, give once a day breeding a try.

W.M. Graves, Extension Dairy Scientist, Univ. of Georgia

■ NUTRITION

Cows eat pounds not percentages

Typically ration compositions are calculated and referenced to as a percent. For example, 16% crude protein (CP), 35% NDF (neutral detergent fiber), 6% fat, etc. are used to describe the ration. This makes comparisons easy between different rations. Also, most feed laws specify nutrient content as percentages. Figure 1 shows the composition of a ration on a percentage basis. It is easy to evaluate the ration or to compare different rations.

The problem is that cows eat pounds, not percentages. To convert the ration composition from percentage to pounds for the cow, the intake of the ration needs to be known. Table 1 shows the effect of different intake of the ration and the amount of nutrients the cow is receiving. If cow A is eating 50 pounds of dry matter she is consuming 8.5 pounds of crude protein and if she is eating 45 pounds of dry matter she is consuming 7.65 pounds of crude protein. If her requirement for crude protein is 8.0 pounds, then cow A is slightly over at 50 pounds of intake and short of protein at 45 pounds of intake.

The ration has not changed but the amount of nutrient intake is dependent on the dry matter intake. Accurate measurements of intake are critical in evaluating if a ration is meeting a cow's needs or not.

Figure 1. Ration composition on a percentage basis.

	Ration	Forage	Concentrate
	%	40%	60%
Ash	3	5	3
Fat	8	3	11
NFC	37	35	38
CP	17	10	22
NDF	35	47	27

Table 1. Effect of dry matter intake of diet on nutrients consumed.

Ration	%	Dry Matter Intake (pounds)			
		40	45	50	55
Ash	3	1.2	1.35	1.5	1.65
Fat	8	3.2	3.6	4.0	4.4
NFC	37	14.8	16.65	18.5	20.35
CP	17	6.8	7.65	8.5	9.35
NDF	35	14.0	15.75	17.5	19.25

■ HEIFERS

Getting calves off to a good start

One of the most important aspects of raising replacement dairy heifers is to get them off to a good start. Surveys of dairy farms throughout the United States indicate that the death loss of calves born alive is greater (>8%) from birth until weaning than from weaning until calving (~2%). In many cases, the cause of death is directly related to the environment the calf is born into and housed in and level of acquired immunity. Limiting exposure to organisms and using a good colostrum management program are two key steps to get calves off to a good start.

Everyone recognizes the need for cows to calve in a clean environment. This reduces exposure of the calf to disease causing organisms that may be found in feces, soiled bedding, and contaminated soil. Well managed pastures are generally considered one of the most desirable places for calving, but a clean stall in a barn can work just as well. The key is to make sure the environment is clean. At birth the calf does not have any natural immunity so it is susceptible to organisms that are in the environment. In most cases the calving pasture is clean, but the other cows in the pasture expose the calf to any diseases they are carrying. Many stalls used for calving are also used for housing sick cows or adjacent sick cow pens so the calf is exposed to organisms that are causing diseases in the herd. When stalls are used for calving, the stall should be cleaned after each cow and should only be used for calving. Ideally these stalls should be separated from any stalls used to house sick cows. In either system, the calf should be removed from the cow immediately and placed in a clean environment. This will reduce exposure to disease transmitted by the cow or ingested from contaminated soil or manure. This type of management practice is essential to minimize the spread of Johne's and other similar diseases.

One of the most important components of a good replacement heifer program is a sound colostrum management program. The calf acquires its initial immunity from the immunoglobulins (Ig) provided by colostrum during the first 24 hours of life by passive transfer. After 24 hours, Ig from colostrum is not absorbed and the Ig concentration in the blood of the calf cannot be increased. Surveys of dairy herds indicate that more than 40% of all calves do not have adequate Ig concentrations (10 g/L or higher). Calves that do not receive adequate immunity are more susceptible to disease, have higher mortality rates, and do not achieve optimum growth rates. To insure that the calf receives adequate Ig, at least one gallon of high quality colostrum should be fed as soon as possible after birth. Although many producers prefer to let the calf nurse the cow, only 40% of the calves consume adequate colostrum to achieve the adequate protection. If the environment is not clean and the cow's teats are dirty, the calf will be exposed to a higher level of pathogens.

The quality of colostrum can be checked using a colostrometer. Typically colostrum from older cows has higher concentrations of Ig than first calf heifers. Excellent quality colostrum from cows tested free of Johne's can be frozen in gallon freezer bags and used to feed calves when good colostrum is not available. Research has also shown that calves fed colostrum for the first three days of life have lower concentrations of pathogens in their gut. The colostrum apparently prevents these organisms from attaching to the gut

wall and colonizing. When good colostrum is not available, a colostrum supplement can be added to the colostrum to provide greater passive immunity to the calf. Colostrum supplements or replacers have not been effective in replacing colostrum, but can boost the Ig status of the calf when lower quality colostrum is available.

There are some data to suggest that colostrum absorption is not as high for calves born during periods of heat stress as those born during cooler periods. Colostrum quality does not appear to differ. Research data in this area are limited on this subject. The Ig absorption is lower for calves that have a difficult or prolonged birth.

Providing a good environment for calving and getting adequate colostrum into the calf immediately after birth allows the replacement dairy heifer to get off to a good start. If death losses from birth through weaning are greater than 5%, producers should critically evaluate their facilities and all aspects of their colostrum management and retrain all employees.

John K. Bernard, Dairy Research and Extension, Univ. of Georgia

■ BEEF QUALITY

Beef quality issues to quality milk producers

Dairy producers do an excellent job of producing a high quality dairy product. Unfortunately, the same cannot always be said about their contribution to the beef supply through elimination of cull cows and bulls. Dairy producers need to be informed of the use of meat from cull animals and the proper methods of handling and liquidating excess animals.

Depending on the season, 18 to 25% of the total U.S. daily beef production comes from cow and bull carcasses. A popular misconception of producers is that the majority of beef from cull cows and bulls is used solely for ground beef; therefore, it is thought that proper handling and the timely marketing of dairy cattle are of less concern. Producers should be informed that primal and subprimal cuts from cows and bulls are fabricated and sold to supermarket and food service operators. Furthermore, cuts from cows and bulls may be used as entree items in family steakhouses, on airlines, sliced beef sandwiches in fast-food establishments, and “quick-to-fix” supermarket beef items (i.e., fajitas).

Production efficiency must be high for dairy producers to make a profit. Several compounds have been developed in recent years that are capable of increasing milk production (bST), as well as reproductive efficiency (GnRH, prostaglandins). Proper administration of injectable products need not be compromised for the sake of convenience. Producers must be reminded to administer products subcutaneously, if possible. A healthy dairy cow can receive between 25-30 injections per lactation (includes bST, hormones and vaccination injections). Most injections are administered in the proper manner (s.q.) and location (neck region). However, the idea that “sometimes it’s just easier to administer injections in the round or hip” should be discouraged. It is important to know that injection-site lesions have been identified 12 to 13 months post-injection. Young calves should be handled in a manner similar to mature animals with subcutaneous injections or intramuscular injections in the neck. Furthermore, all young animals need to be dehorned to eliminate future bruising of other animals.

Dairy producers often think of cull animals as something that must be discarded just prior to death. The appearance of cull cows and bulls that are extremely emaciated, blind, and (or) lame walking through an auction barn is not good public relations for the dairy industry. The idea of on-farm euthanization of some cull animals needs to be considered.

Producers should be reminded that preservation of the hide of cull cattle also is important. Permanent identification of animals is important for record keeping and is the law in “brand states.” Rib brands, which usually cause the most damage to the hide, should be eliminated or moved to the hip area. Dairy producers strive to produce quality milk so that they receive incentive bonuses when marketing their milk. A second method to focus on is beef quality issues that would offer incentives for cows with minimal or no defects. Producers could be paid for cattle on the hoof as they are now. However, after the animal is slaughtered, a certain amount could be sent back to the producers if cows are free of defects.

The message to dairy producers is one of caution. If we don’t monitor animal health and condition, and market in a timely manner, producers may lose a place to market cull cows and bulls. Sale barns may eventually prevent certain animals from being sold through their facility due to the risk of bad public relations. Remember, perception becomes reality when enough people believe it — regardless if it is true.

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■ HERD HEALTH

Reduce mastitis by counting bugs

Environmental mastitis due to non-ag strep and coliforms has become the major mastitis problem in many herds, thanks to widespread efforts to control contagious mastitis and other management changes. Procedures such as J5 vaccination and vitamin E selenium supplementation can help increase cows’ immunity, but reducing exposure to disease organisms is still the best way to prevent new infections.

We know from experiments that the more organisms present on the teat skin when the milking machine is applied, the higher the new infection rate. We also know that if the numbers of organisms on the teat are reduced, the new infection rate drops rapidly. Environmental mastitis does not normally spread from cow to cow. Although this may be possible, it’s probably rare. For all practical purposes, the exposure is from the environment.

- **Keep cows clean and dry** — One simple recommendation for control of environmental mastitis is to milk clean, dry cows. This is a noble goal, but what is clean? And dry? What is really required is to milk cows with few bacteria on the teat skin. A cow that looks “clean and dry” probably has a lower number of bacteria on the teat skin than does a cow with manure on the teats - but is it low enough? There is also a problem with the definition of clean. What is clean to one person may not be to another.
- **Be consistent** — Another issue is consistency. Every teat needs to have a low bacteria load every milking to effectively prevent infections. Dairy producers frequently adapt a cow prep procedure that has been shown to reduce bacteria and assume that as a result they have reduced

bacteria. However, even a proven procedure will not work if not done consistently and correctly. For example, teat ends are frequently missed.

- **Monitor milkers** — Milker training and compliance with established procedure is critical. Monitoring milker performance by watching occasionally does not assure consistency. Videotapes can show if a procedure is being followed, but they won't show enough detail to let you evaluate quality of cow prep. To assure consistency, train milkers well and monitor them on a continuing basis.
- **Monitor milk** — Culturing bulk tank or inline samples to accurately determine the numbers of non-ag-strep and coliforms is an accurate, sensitive, and reasonably easy to use way of assessing the bacterial load on teat surfaces. Remember: The milking machine is a great teat-washing machine. What milkers fail to remove before machine attachment will end up in the milk.
- **Diagnose and fix problems** — When you find that the bacterial load is too high, the next step is to determine the reason. Bacterial load is the result of two factors: the number of bacteria that get on the teat between milkings (from stalls and other environmental areas) and the number removed by the cow prep procedure. Both of these need to be controlled. If the cows are excessively dirty, no amount of cow prep can be completely successful. On the other hand, even though cows appear clean, it is unlikely the bacteria load will be low enough that cleaning is not needed.

Proper bulk tank/milk line collection

Bulk tank cultures and in-line milk sample cultures can help you assess factors such as milking practices and bedding management as well as the level of contagious organisms in the herd. But for the results to be meaningful, you must collect and handle the samples correctly. Some words of advice:

- Collect bulk tank samples from the top of the bulk milk tank after adequately agitating it. If you're sampling a bottom-loading tank, drain the milk down to the clean-out door and take the sample. Do not sample from the outlet valve because bacteria can grow around the valve.
- When collecting line samples, be sure to sanitize and rinse the collection vessel and tube before sampling. Keep the collection vessel cold at all times to prevent bacterial growth. If you take a subsample for laboratory analysis, mix the primary collection vessel first. Freeze or cool the sample immediately and keep it cold or frozen.
- Make sure the bulk tank has been properly cleaned, not merely hosed out.
- A good rule of thumb is to do monthly bulk tank analysis. On some herds it may be preferable to conduct the analysis more frequently. In large herds twice a month is not unreasonable. This will help you detect problems before they become bigger and more costly.
- Have a high-quality laboratory do the analysis. In general, you get what you pay for.