NDSU EXTENSION SERVICE

DAIRY CONNECTION

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■ Editorial

With this issue, we look forward optimistically to another growing season. Herein I've addressed some of the typical topics for the season, with hopes of providing assistance in your upcoming decisions. June is also Dairy Month. Coming up are 4-H and FFA events, expositions, lots of fieldwork and hopefully a little time to enjoy the summer. Have a good season, and I hope to see you at some of the upcoming events.

Regards,

J.W. Schroeder
Extension Dairy Specialist

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■ FORAGES

Estimating forage yield

Forages have a variety of moisture levels and determining dry matter yield can be difficult. So how do you measure the amount of forage dry matter in a wagonload of silage?

Measurements taken at the University of Wisconsin's experiment station in Marshfield give producers a starting point in estimating their forage dry matter yield. For three years, a total of 486 wagonloads of haylage, corn silage, grass, clover and oatlage were measured and tested for moisture at the station. The table shows these forages had a typical density of around 5 pounds per cubic foot.

This estimate can help you calculate the amount of dry matter in a wagon. For example, if you have a wagon of silage that measures 16 feet long by 7 feet

wide, and it is filled to a depth of 6 feet, you would have 672 cubic feet of silage or approximately 3,360 pounds of dry matter [(16x7x6)(5)=3,360].

Forage Type	Cutting Number	Avg. Density	Std. Deviation
		— lbs. dry matter per cubic ft. —	
Haylage	first	5.67	1.13
Haylage	second	5.00	0.97
Haylage	third	5.10	0.77
Haylage	fourth	4.95	0.65
Corn silage	—	5.05	0.87
Grass	all	4.55	0.61
Clover	all	5.48	0.95
Oatlage	—	4.99	0.65

Source: Dairy Herd Management

PEAQ alfalfa measurements

Forage quality allows medium-producing herds to attain cost-effective milk production with lower levels of supplementation and higher producing herds to achieve cost-effective production by optimizing income over feed costs on a per cow basis.

Gauging alfalfa quality in the first crop depends on determining if the alfalfa is in the pre-bud, bud and flower stage. A simple measurement of height of tallest plant in a 2-foot square in five to six random locations of a field will determine approximate Relative Feed Value (RFV). Higher mixtures of grasses, due to their earlier maturity, will reduce the approximate RFV. This method has been research verified over a multitude of locations and years across the U.S. This table depicts the RFV's based on growth stage listed at the top of the column and heights in the first column.

Height	Pre-Bud RFV	Bud-RFV	Flower RFV
23	195	185	174
24	190	181	170
25	185	176	166
26	180	172	162
27	175	168	158
28	171	164	154
29	167	160	151
30	163	156	147
31	159	152	144
32	155	149	140
33	152	145	137
34	148	142	136
35	145	139	131
36	142	136	128
37	138	133	126
38	135	130	123
39	132	127	121
40	129	124	118

Source: D. Thoreson, Iowa State University

■ HERD HEALTH

To deworm or not to deworm… that is the question!

There continues to be much debate about the value of using anthelmintics (dewormers) to treat internal parasites in adult dairy cattle. Over the years numerous studies have attempted to settle this debate once and for all. However, many of the studies conflict in the method and timing of the treatment and, most importantly, in their conclusions about the benefit of deworming mature cattle.

While more than half of the studies indicate an improvement in performance (milk yield) in treated cattle, the range of responses is quite large. This means that even if treatment improves performance it may not be economically justifiable to use anthelmintics in this group of cattle.

The use of strategic spring and summer deworming programs (rather than treating at dry-off or freshening, for example) may result in a more predictable response to treatment. Given the unpredictable response to anthelmintic treatment (some studies actually showed a drop in milk production after treatment!), one recommendation would be to work with your veterinarian to assess the level of internal parasitism in your mature herd, especially if they are on pasture during the spring and summer. If fecal egg counts indicate the presence of a large number of 'worms' in animals, a deworming program could be put in place. Although this approach could not guarantee that treatment would be economically justifiable, it would increase the chances of observing a positive and worthwhile response in milk production.

Source: E. Hovingh, DVM, Virginia Tech

■ NUTRITION

DCAD for the common man

The dietary cation-anion difference (DCAD) is a useful way to evaluate forages for prefresh dry cows. The equation, however, often either scares farmers or puts them to sleep. It's not really that difficult; if it was, I wouldn't understand it. First, multiply the percent concentration for each of the nutrients by the appropriate factor. Then add up the values for the cations, add up the values for the anions, then subtract the anions from the cations. The goal for dry cow forages is +350 or less. The DCAD equation includes estimates of relative availability of each nutrient to the cow, but we've accounted for this in the multiplication factors. Here's an example using a grass silage sample from our farm:

Cations Miner Institute Nutrient	Sample%	x Factor		Anions Miner Institute Nutrient	Sample%	x Factor	
Sodium	0.005	x 435	= 2	Chloride	0.63	x 282	= 178
Potassium	2.15	x 256	= 550	Sulfur	0.18	x 322	= 58
Calcium	0.67	x 75	= 50	Phosphorus	0.24	x 156	= 37
Magnesium	0.18		= 22				
			624				273

624 minus 273 = +351

A few comments: Note that sodium concentration doesn't amount to much. For most grasses we've tested, the cations sodium, calcium, and magnesium just about offset the anions sulfur and phosphorus. Potassium and chloride are the two nutrients driving the DCAD equation. Chloride concentration in grasses differs considerably. While the chloride concentration in this grass was worth 178 megacalories / Kg, the DCAD value of the chloride in grass silage we've fed our cows in the past year has ranged from 70 to 347.

■ BUSINESS

ND3P-Users find profit

Good news. The North Dakota Dairy Diagnostic Program (ND3P) received its third (albeit final) round of funding from APUC this spring. This means we can begin to expand the program.

There are changes in program personnel as well. Tom Risdal has joined us as the statewide coordinator. He is off to a fast start and many of you have already met him. Currently Tom and Merna Bredwick are working diligently to take us to the next level. In addition, Cass Clay has made a three-year commitment for 10 of their producers. So if you're looking for an opportunity to get started, now's the time.

The ultimate question for considering ND3P is, "does it help you reach your goals?" For many, the goal is increased profit. Here are a couple of examples of actual results currently being summarized. The names have been withheld to maintain confidentiality. If you wish to learn more, we will ask the dairy farm family for permission to make contact.

Farm No. 1 —
Expanded from 87 to 130 cows while maintaining milk production at 57 lbs. per cow per day. Gross Economic Impact – $85,969 (based on $11.50 / cwt. milk price and a 305 day period; typically return to labor and management is 30% of gross).

Farm No. 8 —
In one year, expanded herd from 110 to 208 cows. Feed costs decreased from $5.21 to $4.41 per cwt. of milk. Milk production increased from 21,069 lbs. to 22,528 lbs. Net return increased after all direct and overhead costs from $73,773 to $93,059. Net Return $19,286 (actual net return increase after all expenses including depreciation and inventory changes).

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■ MISCELLANEOUS

Farming facts and figures

There are now more full-time prisoners in the U.S. than there are full-time farmers. If Holland implements European environmental rules as written, it will have to reduce dairy cow numbers by 50 percent in the next few years (by 2004). U.S. farmers over the age of 65 outnumber those under 35 by three to one.

Agribusiness notes

Aventis CropScience has canceled the registration of StarLink corn and has offered to purchase the total production from the 300,000 acres of corn grown with the StarLink trait. This corn would be fed to livestock or processed into ethanol. Dennis Avery, director of global food issues at the Hudson Institute, is concerned that agriculture will lose on biotechnology issues. The reason, he says, is that the opposition is well funded and "because we're cheap, defensive and feel inferior."

Half a glass of milk

Somebody left a glass of milk next to the keyboard. Reaction:

OPTIMIST: The glass if half full.

PESSIMIST: The glass is half empty.

FUTURIST: The milk's in the wrong half of the glass.

PASCAL PROGRAMMER: Well, what type of milk is it?

C PROGRAMMER: No thanks, I drink straight from the jug.

ASSEMBLY PROGRAMMER: No thanks, I drink straight from the cow.

BASIC PROGRAMMER: No thanks, I'm still breast feeding.

FUZZY LOGIC GUY: I may or may not have drunk some part of that milk.

PENTIUM USER: I drank Glass #.49999999 . . . but don't hold me to that.

WINDOWS USER: Where's my straw?

MAC USER: Where's my pump?

UNIX USER: Nahh . . . too easy.

SHAREWARE GAME AUTHOR: That glass is free, the next one you have to pay for.

CIA: What makes you think that's milk?

COPY PROTECTION CRAZY: Somebody drank half my milk and didn't pay for it!

BILL GATES: Not enough market share to be Microsoft Milk.

APPLE COMPUTER: You guys really oughta be drinking Perrier.

NATIONAL NEWS MEDIA: Hey, we wanted OJ!!!

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■ HERD MANAGEMENT

Reasons cows leave the herd

In a recent study, scientists at University of Georgia looked at several factors affecting the reasons cows leave the herd, including the effect of region. Herd summary information for over 11,000 Holstein herds obtained from the Dairy Records Management Systems (DRMS), Raleigh, N.C., was analyzed for the three regions and is shown in Figure 1.

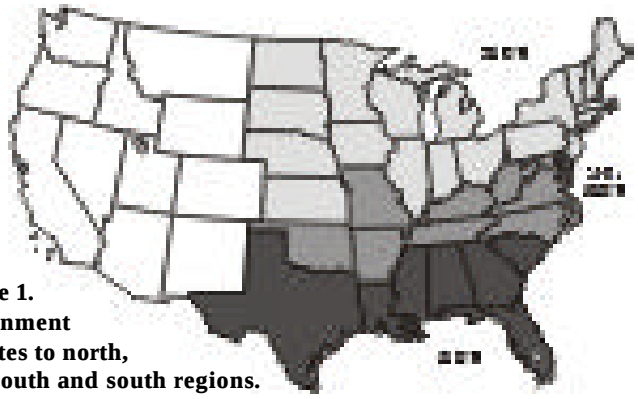

Figure 1. Assignment of states to north, mid-south and south regions.

The overall culling or left herd rate and the specific reasons cows left the herd expressed on a percentage basis are shown in Table 1. Herd Summary Report values for your herd can be compared to this summary. Convert the number of cows for each reason as shown on the Herd Summary report to a percentage as follows:

$$\frac{\text{Number cows leaving}}{\text{Number cows in herd}}$$

Herds in the Midsouth reported a slightly higher percentage of cows leaving (36.3%) than herds in the South region (34.5%). A culling rate of about 25 percent is considered optimal. Culling in all regions was well above the optimum rate.

Reproduction is frequently reported as a primary reason for culling. In this study, reproduction was significantly higher in the South (20.8%) compared to the other two regions. This difference may be due to the negative effect of heat and humidity in the South.

The percentage of cows reported as leaving for mastitis was lower in the South. Higher somatic cell count (SCC) levels in the South are usually attributed to the warm, humid environmental conditions. The lower culling rate for mastitis may also contribute to the higher average SCC levels in this region. The general lack of an economic incentive to lower SCC levels may be an additional factor.

Reported death losses were highest in the South and lowest in the North. The injury / other category followed an opposite trend. This difference among regions represents a significant economic loss for herds in the South region. Little or no salvage value is received for cows that die and additional costs are incurred for disposal.

Culling a particular cow from the herd requires either a voluntary (choice) or involuntary (forced) decision. Involuntary culling occurs when a cow leaves because of an accident, disease, injury or death. Voluntary culling occurs when a cow is sold because she does not meet certain herd standards such as a minimum level of milk production. Cows sold to other producers for dairy purposes are also voluntary culls.

In order to improve a herd's production efficiency and profitability, the number of cows culled involuntarily must be reduced. A starting point is to begin accurately recording the reasons cows are leaving your herd. Then determine which of the involuntary culling categories is high.

Certainly the highpercentage of cows leaving for reproduction and death in the south region is a cause for concern. Much progress has been made in reducing heat stress on many farms. The prime motivation has been to improve milk production. This study would indirectly suggest that controlling heat stress may also have additional economic benefits by reducing the number of cows leaving the herd for reproduction and death.

For example, herds of 200 cows in both the North and South regions would each cull 70 cows annually (200 x .35). However, death losses average 14 cows in

Table 1. Effect of region on reasons cows left the herd.

Region	Left (all reasons)	Repro-duction	Mastitis	Udder	Died	Low Production	Injury/ Other	Dairy	Feet & Legs	Disease	Not Reported
	%										
North	35.1	17.1	11.9	0.2	14.8	11.6	25.8	2.9	5.6	3.5	6.6
Midsouth	36.3	16.8	11.9	0.3	17.5	13.3	16.5	5.3	6.1	4.6	7.8
South	34.5	20.8	10.1	0.2	20.1	15.8	14.8	4.4	5.9	3.8	4.2

the South (70 x .20) and 10 cows in the North (70 a .148). If replacement heifers are valued at $1400 each, the additional cost in the South because of higher death losses would be $5600. Lowering death losses by reducing heat stress or instituting other management practices could have a significant impact on profitability.

Source: W. Smith and O. Ely, Georgia DairyFax

Successful heat detection – top 10

10. **Don't take shortcuts:** Is she or isn't she? Know when she was in heat last. Spend time observing cows. Make sure you are giving the hormone injections correctly so the complete dose of hormone will be administered. Write down your observations so others will know and you will not forget.
9. **Induced heat or ovulation programs:** Inducing heat and / or ovulation with hormonal treatments that include GnRH and PFG_{2a} increases the probability of detecting estrus or allows AI without estrus detection (timed insemination). However, make sure you have a program to catch the cows that return to estrus in three weeks or a procedure to re-synchronize cows as quickly as possible so time is not lost because of the elimination of heat detection.
8. **Use aids wisely:** Heat detection aids such as Kamar™ or Beacon® heatmount devices should be used to supplement, not replace, visual detection. The HeatWatch® electronic heat detection system requires management decisions on suspect cows, interpretation of information for timely insemination and weekly maintenance to keep transmitters on cows.
7. **Location, location, location:** Visual observations should be where cows have a good footing surface with few obstacles to hinder interaction.
6. **Timing is everything:** Use time efficiently. Not during feeding or milking times. Cows should have space to interact with good footing and no distributing interactions by YOU.
5. **A little is good but more is better:** Cows should be observed many times per day. Three daily observation periods is a minimum and four is even better, but **who** wants to be that good? The average heat period lasts for only eight hours, so twice a day observation periods will miss many cycling cows.
4. **Minimize sore feet:** A cow with sore feet usually does not mount or permit other cows to mount her. Treating infected or sore feet as soon as possible is important. Allowing cows time off of concrete is important.
3. **Group interaction:** Watch for sexually active groups of cows. Cows in heat and cows that will be in heat in the next 48 hours commonly congregate together. Cows usually alter their normal routine of behavior when approaching heat.
2. **Utilize records:** All heat periods detected should be recorded. A 50 percent conception rate means half the cows bred will become pregnant and half will return to heat in 18 to 24 days. Breeding wheels, calendars, and heat expectancy charts are inexpensive and effective tools.
1. **Establish standard operation procedures:** Cows should be observed at times and at a location where they are likely to express estrus. Establish a hormone program to induce estrus in cows and heifers. The standard operating procedures: When - Where - Signs of Estrus Observed - Who to Notify should be followed by everyone who has the responsibility for observing cows for expression of estrus.

The bottom line: Cows come into heat equally during all hours of the day, are not very active, and do not stay in heat very long, making it difficult to observe them in heat. The equal distribution of the onset of estrus during the day combined with the average estrus duration of seven hours dictate that heat detection observations should occur three to four times daily, approximately six to eight hours apart. Providing an environment that encourages cows to express heat and conducting frequent heat detection are essential to improve reproductive efficiency. Allow cows to interact in a small, uncrowded area with secure footing and make use of heat detection aids to catch as many cows as possible. Eight times out of 10, the area of reproductive management that needs improvement is heat detection. There are very few dairy farms that could not reduce the average calving interval and culling rate by spending a little more time and effort on heat detection. Achieving accurate and efficient heat detection requires extra effort and doesn't just happen. Cycling cows require good nutrition, excellent cow comfort, the best hoof health possible and attention to details.

Source: R,L, Nebel, Virginia Cooperative Extension