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Dairy Lines

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Upcoming Events

April 27–28, 1998
Heart of America Dairy Management Conference for Dairy Professionals
Kansas City, MO

August 17–18, 1998
Midwest Dairy Management Conference
Minneapolis, MN

Kansas State University
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Nutritional Management to Reduce the Incidence of Displaced Abomasum

by Dan Waldner

The transition period from two weeks prior to calving through two to four weeks after calving is the major risk period for the occurrence of displaced abomasum (DA). The transition period is characterized by prepartum intake depression, followed by a slow increase in postpartum intake. Reduced feed intake during the transition period is a major risk factor for DA through lower rumen fill, reduced forage to concentrate ratio in herds not fed a total mixed ration (TMR), and increased incidence of other postpartum disorders.

Lead Feeding: Although evidence is limited, it is suggested that the practice of lead feeding (increasing concentrates during the last two to three weeks prior to parturition) reduces postpartum disorders. No or minimal lead feeding may increase the risk of acidosis and DA through failure to increase the absorptive capacity of the rumen and to adapt the rumen microbial population to intake of high-energy postpartum diets. A guideline for prepartum concentrate lead feeding of 0.50 to 0.75 percent of body weight restricts the forage to concentrate ratio between 60:40 and 40:60. Feeding a TMR to control the forage to concentrate ratio is recommended. A transition group TMR for early postpartum cows may also be warranted.

Dry Cow Forage Program: Numerous forage programs are used for dry cows on commercial dairies. One study reported DA incidence rates of 3.5, 10, and 10 percent for forage programs of chopped hay, haycrop silage, and corn silage. In another study, diets consisting of long hay, 50 percent long hay and 50 percent corn silage (dry matter basis), and corn silage dry matter restricted to 1 percent of body weight had incidence rates for DA of 3.0, 4.3, and 6.3 percent, respectively. Incidence rates for ketosis were highest for the all hay diet (9.1 percent versus 6.3 to 6.4 percent). The higher incidence of DA for corn silage may have been due to low ruminal fill being related to restricted amounts of dietary energy and lack of physical fiber. Silage should be chopped to contain 15 to 20 percent of the particles (weight basis) over 1½ inches long, but this recommendation is based solely on milk fat test considerations. The higher incidence of ketosis for all hay diets may have been due to lack of dietary energy. The lowest incidence of DA plus ketosis was observed for hay and corn silage (10.6 percent versus 12.1 to 12.7 percent). Based on these observations, the use of at least 6 to 10 pounds of long hay with corn silage should prove beneficial in most situations.

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Heart of America Dairy Herd Improvement Summary (April)

	Quartiles				Your Herd
	1	2	3	4	
Ayrshire					
Rolling Herd Average	15,311	14,204	13,252	10,270	
Peak Milk Yield 1st	56.5	49.0	50.0	40.0	
Peak Milk Yield 2nd	70.0	62.5	59.5	51.3	
Peak Milk Yield 3rd	78.0	64.5	65.5	60.5	
Peak Milk Yield Avg.	69.0	57.5	58.5	49.3	
Income/Feed Cost	963	788	1,013.5	341	
SCC Average	218.5	340	397	346	
Days to 1st Service	76	73.5	58.5	85	
Days Open	140.5	135.0	110.5	167	
Projected Calving Interval	13.8	13.6	12.8	14.7	
Brown Swiss					
Rolling Herd Average	19,365	15,700	14,403	13,742	
Peak Milk Yield 1st	66.6	54.8	51.0	51.5	
Peak Milk Yield 2nd	85.6	69.6	63.8	65.1	
Peak Milk Yield 3rd	91.2	74.8	72.8	69.5	
Peak Milk Yield Avg.	82.4	68.3	63.4	63.3	
Income/Feed Cost	1,319	1,245	952	937	
SCC Average	306	317	306	236.5	
Days to 1st Service	75	92.5	82	88	
Days Open	139	145	165	138	
Projected Calving Interval	13.7	13.9	14.6	13.7	
Guernsey					
Rolling Herd Average	16,115	15,164	12,991	11,501	
Peak Milk Yield 1st	61.0	58.0	49.5	50.5	
Peak Milk Yield 2nd	74.0	67.5	55.5	51.0	
Peak Milk Yield 3rd	69.0	73.0	60.5	57.5	
Peak Milk Yield Avg.	67.0	67.0	55.5	53.5	
Income/Feed Cost	1,579	1,325	1,106	328	
SCC Average	135	222.5	608	404	
Days to 1st Service	93	42.5	32	46	
Days Open	147	167	205.5	227	
Projected Calving Interval	14.1	14.7	16.0	16.7	
Holstein					
Rolling Herd Average	22,344	19,451	17,432	14,251	
Peak Milk Yield 1st	78.8	69.5	63.9	54.4	
Peak Milk Yield 2nd	96.2	85.4	77.4	65.8	
Peak Milk Yield 3rd	102.1	91.6	83.3	71.2	
Peak Milk Yield Avg.	91.9	82.5	75.5	65.4	
Income/Feed Cost	1,679	1,373	1,186	921	
SCC Average	325	337	377	437	
Days to 1st Service	88.5	89	85	76	
Days Open	156	155	160	182	
Projected Calving Interval	14.3	14.3	14.5	15.2	
Jersey					
Rolling Herd Average	15,739	13,289	11,841	9,651	
Peak Milk Yield 1st	54.8	47.8	41.9	39.9	
Peak Milk Yield 2nd	65.0	58.7	53.5	43.7	
Peak Milk Yield 3rd	71.5	62.0	56.3	48.3	
Peak Milk Yield Avg.	64.2	57.6	50.5	45.1	
Income/Feed Cost	1,411	996	846	474	
SCC Average	303	338	227	383	
Days to 1st Service	85.5	78	77	65	
Days Open	124	128	134.5	183	
Projected Calving Interval	13.2	13.4	13.6	15.2	

Nutritional Management

continued from page 1

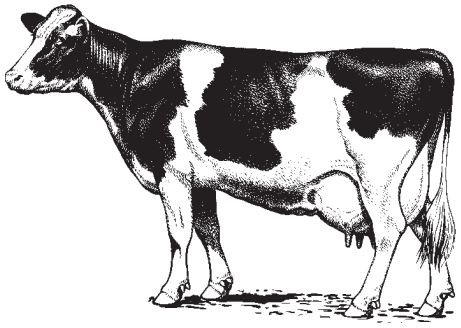
Bunk Management: Inadequate bunk space and high competition at the feed bunk can limit feed intake. Also, restricted bunk access time, feed availability and poor environmental and social adaptation of transition cows affects feed intake. The feed lane should provide 27 to 30 inches of bunk space per cow and feed should be available at least 20 hours per day.

The TMR mixing process can alter the actual nutrient densities of the consumed ration relative to nutrient specifications of the formulated ration. Sorting of the TMR in the feed bunk can also cause this problem. Excess TMR mixing can cause a lack of physical fiber. As a rule, cows should be provided at least 5 pounds of fiber that is more than 1½ inches long to circumvent off-feed and milkfat test problems.

Body Condition: Cows with excess body condition at parturition are also at increased risk for DA. Incidence rates for 1,400 cows on 95 commercial dairy herds with low (2.75 to 3.25; thin), medium (3.25 to 4), and high (>_4; obese) body condition score (BCS) at parturition were 3.1, 6.3, and 8.2 percent, respectively. The increased incidence rate for cows with high BCS may be related to increased incidence of ketosis observed in the cows with higher BCS. Additionally, over-conditioned cows may have greater prepartum intake depression. Feed intake data summarized from the dry period of 20 multiparous cows show dry matter intake of 1.5 and 2.0 percent of body weight for cows with high (>3.6) and low (<3.6) BCS, respectively. In another study, cows were fed to a BCS at parturition of 2 to 3 (low), 3 to 4 (medium), and 4 to 5 (high). During the first 16 weeks postpartum, cows with higher BCS at parturition consumed less dry matter and reached maximum dry matter intake later. An acceptable range for BCS at calving is 3.25 to 3.75.

Hypocalcemia: From a study of 510 Holstein cows in a commercial dairy herd, cows that were hypocalcemic at parturition were at increased risk of DA. Strategies that prevent hypocalcemia may be useful for the prevention of DA in high incidence herds.

The Bottom Line: Because of low feed consumption, the transition period is the major risk period for DA. Feeding and management practices that prevent other postpartum disorders reduce the risk of DA. Ketosis and DA are closely related postpartum disorders, and cows that have excess BCS at parturition are at increased risk for both. (J. Dairy Sci. 80:2448, 1997)



Reducing Heat Stress

J.F. Smith and J.P. Harner

As heat stress becomes more severe, the pounds of dry matter intake required for maintenance increases and dry matter intake decreases resulting in a decrease in milk production. Figure 1 demonstrates the relationship between the pounds of dry matter required for maintenance with increasing temperatures.

Water Availability: High producing dairy cows can consume between 30 to 50 gallons of water per day. Water should be provided to cows leaving the milking parlor. In parlors that are double 25's or smaller, one trough 8 feet long is usually sufficient. In freestall housing, water should be located at all crossovers with one waterer or 2 feet of tank perimeter for 10 to 20 cows.

Shades: Cows housed in drylot or pasture situations should be provided with solid shade. Results from studies in Florida and Arizona indicate that shaded cows will produce approximately 4 to 5 pounds more milk per day. Providing 38 to 45 square feet of solid shade per mature dairy cow is adequate to reduce solar radiation. Height of shades should be at least 12 feet, with a north to south orientation to prevent wet areas from developing under the shade. Work done with more porous materials, such as shade cloth and snow fence, has shown that these are not as effective as solid shades.

Holding Pen: The holding pen is another place where cows experience heat stress. Crowding cows into a holding pen is similar to putting several large furnaces into a small area with their thermostats set at 101°F. The first priority should be to reduce time in the holding pen. Provide shade over the holding pen and open the sides of the holding pen to increase ventilation. Fans can also be installed to aid in the ventilation of the holding pen.

Cows may be cooled in the holding pen prior to milking. This method uses sprinklers to wet the cows and large fans to hasten evaporation of the water. Using this technique, cows are cooled at least two to three times per day—depending on how often they are milked. Both spray and fans are continuously operated using approximately 1,000 cubic feet per minute (CFM) of air per cow per hour. Fans should be mounted overhead at a 30° angle from vertical, so that the air will blow down and around the cows. Water lines in front of the fans spray 7 to 10 gallons per hour at 125 to 150 psi. Fans with a diameter of 36 to 48 inches are commonly used for holding pens. In an Arizona trial, body temperature was lowered 3.5°F, resulting in 1.76 pounds more milk per cow per day, when cooled in the holding pen.

Exit Lane Cooling: Cows can be cooled as they exit the parlor. Typically, three to four nozzles are installed in the exit lane, with a delivery of approximately 8 gallons of water per minute at 35 to 40 psi. The nozzles are turned on and off with an electric eye or a wand switch as the cow passes under the nozzles. If properly installed, the top and sides of the cow will be wet, but the head and udder will remain dry so water will not remove post milking teat dip.

Freestalls: Additional cooling can be added to freestalls by adding fans and a sprinkler system. However, the bedding in the stalls should not become wet. Typically, a sprinkler system can be located over the lockups, and fans can be used over the feed line, freestalls or both. A sprinkler system may be controlled by a timer to reduce water usage. Producers can use either 180° (half-circle) or 360° (full-circle) nozzles. The 180° nozzles work well next to feed lines or bunks to prevent wetting of the feed. Nozzle sizes ranging from 7 to 30 gallons per hour per nozzle are generally used to conserve water. Experiment with nozzle type, nozzle size, nozzle spacing and operating pressure to determine which nozzles work best. Using automatic timers to regulate cycle length, sprinklers can be operated intermittently, such as every 2 to 3 minutes per 15 minutes. The cycle can be adjusted depending on the level of heat stress.

Hay Prices*—Kansas

	Location	Quality	Price ($/ton)
Alfalfa	Southwestern Kansas	Premium	100–110
Alfalfa	Southwestern Kansas	Good	90–100
Alfalfa	South Central Kansas	Premium	100–115
Alfalfa	South Central Kansas	Good	90–100
Alfalfa	Southeastern Kansas	Premium	100–110
Alfalfa	Southeastern Kansas	Good	90–100
Alfalfa	Northwestern Kansas	Premium	100–110
Alfalfa	Northwestern Kansas	Good	85–90
Alfalfa	North Central Kansas	Premium	100–120
Alfalfa	North Central Kansas	Good	90–100

Source: USDA Weekly Hay Report, *Week ending April 7, 1998*

*Premium Hay RFV = 170–200
Good Hay RFV = 150–170

Hay Prices—Oklahoma

	Location	Quality	Price ($/ton)
Alfalfa	Central / Western, OK	Premium	100–130
Alfalfa	Central / Western, OK	Good	80–100
Alfalfa	Panhandle, OK	Premium	100–130
Alfalfa	Panhandle, OK	Good	80–100

Source: Oklahoma Department of Agriculture, *March 26, 1998*

Feed Stuffs Prices

	Location	Price ($/ton)
SBM 48%	Kansas City	165.90–170.90
Cotton Seed Meal	Kansas City	139–142
Whole Cottonseed	Memphis	138
Blood Meal	Central United States	365–370
Corn Hominy	Kansas City	92–94
Corn Gluten Feed	Kansas City	80–82
Corn Gluten Meal 60%	Kansas City	245–250
Distillers Dried Grain	Central Illinois	85–92
Brewers Dried Grain	St. Louis	NA
Wheat Middlings	Kansas City	60–64

Source: USDA Weekly Feed Stuffs Report, *Week ending April 1, 1998*

Priorities for Reducing Heat Stress. Access to cool, clean drinking water and providing shade in the holding pen and housing area should be the producer's first priority. The second priority should be to provide proper ventilation in the freestall housing and milking center. Spray and fan cooling systems can be installed in the holding pens, feed area and some freestall facilities as a third priority.

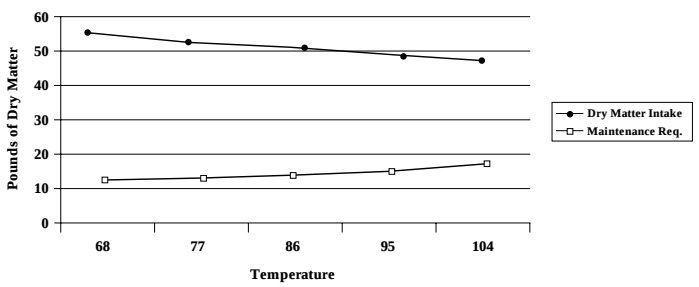


Figure 1. Total dry matter intake1 and pounds of dry matter required for maintenance with increasing environmental temperature (dew point = 30).

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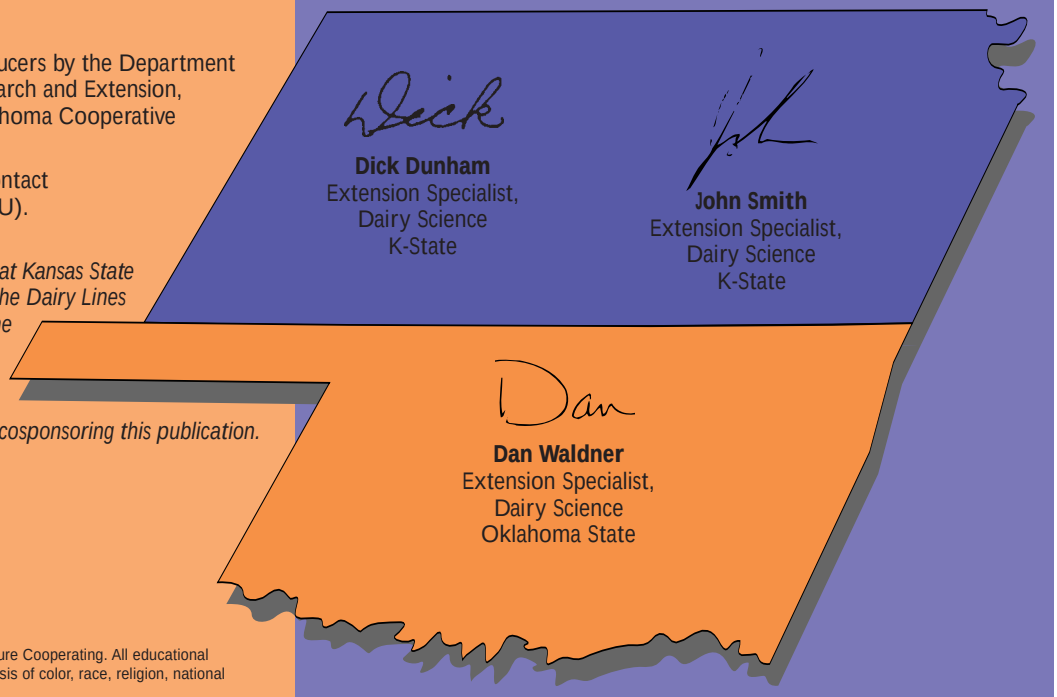

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