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Dairy Lines

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Co-Editors

John F. Smith
Extension Specialist, Dairy Science

Dan Waldner
Extension Specialist, Dairy Science

Mike Brouk
Extension Specialist, Dairy Science

Contributors

Karen Schmidt
Professor, Dairy Products

John Shirley
Professor, Dairy Science

Jeff Stevenson
Professor, Dairy Science

Dave Sukup
Manager, Heart of America DHI

Upcoming Events

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February 16, 2002
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Feeding Waste Milk to Dairy Calves

This article is reprinted from a fact sheet produced by extension dairy specialists from Oklahoma, New Mexico and Texas.

Dairy producers feed a variety of liquid feeds to young calves after the initial colostrum. These liquid feeds include surplus colostrum, whole milk, transition milk, waste or discard milk and milk replacer.

Waste or discard milk is milk that cannot be sold for human consumption because it comes from cows treated with antibiotics for mastitis or other illnesses.

Discard milk losses range from 48 to 136 pounds of milk per cow per year. To reduce some of the economic loss, 38 percent of dairy producers feed waste milk to calves.

Many dairy producers avoid feeding waste milk to calves, however, for fear of increasing calf morbidity or increasing the incidence of heifers calving with mastitis or blind quarters. In early studies, calves were generally housed in pens that enabled them to suckle the rudimentary teats of other calves. This led to an increase in the incidence of mastitis in developing heifers.

Research shows that calves fed waste milk have similar growth rates and incidence of scouring as milk-fed controls.

Precautions for Feeding Waste Milk

Waste milk can be a safe liquid feed for calves provided certain precautions are followed.

■ Do not feed waste milk to newborn calves on the first day of life. The intestinal wall is permeable to bacteria that could cause illness.

■ House calves fed waste milk individually to prevent the suckling of one another. This should reduce possible transmission of infectious microorganisms that cause mastitis.

■ Do not feed waste milk from antibiotic-treated cows to calves intended for meat production. Antibiotic residues from the milk could be deposited in the tissues of the calves.

Waste Milk Storage

The need to handle large quantities of waste milk requires dairy operators to have the proper equipment. Obtain a small, used bulk tank to store the daily production of waste milk. This allows pooling of all sources of waste milk (i.e., mastitis and/or transition milk, etc.) and reduces the chances of feeding excessively high levels of antibiotic milk in one feeding. Clean the tank at least every other day.

Pasteurization of Waste Milk Fed to Calves

Young calves are susceptible to diseases. When expanding herds or buying replacements it is important to know the complete health status of introduced cows. Feeding milk from cows of unknown health status could be detrimental to the health of calves.

Pasteurization safely decreases pathogens in all types of milk fed to young calves. Recently, University of

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California at Davis researchers reported that calves fed pasteurized milk had fewer days with diarrhea and pneumonia than calves fed unpasteurized milk.

Also, calves fed pasteurized milk had greater average weight gain than calves fed unpasteurized milk. Calves fed pasteurized milk grossed an extra $8.13 per head, attributed to reduced health complications and treatment costs, when compared with calves fed unpasteurized milk. The researchers calculated that 315 calves (from a dairy of approximately 1,260 cows) would need to be fed daily to make pasteurization economically feasible.

Research from the National Animal Disease Center showed that pasteurization of milk at 162 degrees F (72 degrees C) for 15 seconds killed all *Mycobacterium paratuberculosis*, the bacteria responsible for Johne's disease. To effectively destroy *M. paratuberculosis* in milk, a continuous-flow (turbulent) pasteurizer is necessary. A continuous-flow pasteurizer quickly heats and holds milk at temperatures that kill bacteria. The milk is then quickly cooled, maintaining the nutritional components and flavor. Bacterial organisms in milk may clump together and not be pasteurized with a batch-type (static) pasteurization system.

While it is recommended that waste milk be pasteurized, pasteurization of colostrum is discouraged. The elevated temperatures associated with pasteurization can destroy immunoglobulins that are important for passive immunity transfer to young calves. Also, colostrum is more dense than milk, which makes it more difficult to raise pasteurization temperatures high enough to kill bacterial organisms such as *M. paratuberculosis*.

Several bacterial organisms, including *E. coli*, bovine viral diarrhea (BVD), salmonella, *Streptococcus* species and *Staphylococcus* species, have been identified in waste milk. Pasteurization of waste milk reduces microbial loads before use as calf feeds. Pasteurization destroys Mycoplasma mastitis species, thus eliminating mycoplasma transmission to calves. Similarly, pasteurization destroys bovine leukosis virus (BLV), so the pasteurized milk from BLV-positive cows can be fed to calves when BLV-free milk is not available.

Although pasteurization reduces the microbial load of waste milk, pasteurization is not sterilization. A heavy bacterial load in waste milk will not be completely eliminated by pasteurization. Also, pasteurization does not remove potential contamination from antibiotics in waste milk.

Usage Guidelines

Milk from transition and sick cows cannot be sold and must be discarded. Waste milk can be fed to calves but follow a few precautions.

■ Before using as a calf feed, pasteurize waste milk to reduce microbial load.

■ Do not feed waste milk to newborn calves.

■ Use caution when feeding waste milk to calves that are destined for beef production.

■ House heifer calves individually (i.e., hutches) when feeding waste milk.

■ Know the health status of the cows from which waste milk is obtained. Unless milk is pasteurized, do not feed milk from cows shedding BVD, Johne's or from cows infected with E. coli, Pasteurella or BLV.

■ Don't allow waste milk to sit for extended periods of time without refrigeration.

■ Discard waste milk that is excessively bloody, watery or unusual in appearance.

■ Pasteurization of waste milk decreases illnesses in calves compared with no pasteurization. If handled properly, waste milk is an economical and nutritious source of liquid feed for young dairy calves.

Clinical Mastitis and Conception Rates

There is mounting evidence of an association between clinical mastitis and reproductive performance. It appears that the pathophysiologic events that follow clinical intramammary infection often involve the release of inflammatory mediators that can have negative effects on luteal function, levels of circulating progesterone and maintenance of early pregnancy. These effects are largely associated with the endotoxin release in clinical coliform mastitis. A mastitis event at or shortly after breeding may have a negative impact on the establishment and/or maintenance of pregnancy through either the hypothalamo-pituitary-ovarian axis, the uterine-ovarian axis or a nutritional effect on hormone levels.

In the early 1990's, studies of coliform mastitis in California revealed that cows with clinical mastitis had altered breeding intervals and reduced reproductive performance. More recent studies have added further evidence to the case for an association between intramammary infections and reduced reproductive performance.

University of Guelph researchers conducted a study to determine if cows that experience clinical mastitis within 30 days after breeding have a lower conception rate than cows not experiencing clinical mastitis.

Conception rates for first, second and third-and-greater services were determined. Overall, cows without a mastitis event within 30 days after breeding had a conception rate of 46%, while those with a recorded mastitis event within 30 days of breeding had a conception rate 38%. It is noteworthy that the difference in conception rate at first service was 47% versus 31% for cows without a mastitis event versus cows with a mastitis event, respectively. Results indicated that cows without a clinical mastitis event within 30 days after breeding were 1.4 times as likely to be found pregnant at rectal pregnancy examination performed between 35 and 60 days after insemination.

Source: NMC Annual Meeting Proceedings (2001).

Heart of America Dairy Herd Improvement Summary

	Quartiles				Your Herd
	1	2	3	4	
Ayrshire					
Rolling Herd Average	16,950	16,054	14,028	11,768	
Summit Milk Yield 1st	56.0	28.0	50.5	45.5	
Summit Milk Yield 2nd	66.0	31.0	60.5	57.5	
Summit Milk Yield 3rd	73.0	59.5	68.0	64.0	
Summit Milk Yield Avg.	66.0	58.0	59.0	59.5	
Income/Feed Cost	1,339	1,142	1,103	566	
SCC Average	447	257	440	359	
Days to 1st Service	113	62	144	57	
Days Open	151	113	180	148	
Projected Calving Interval	14.2	12.9	15.1	14.1	
Brown Swiss					
Rolling Herd Average	20,557	17,252	15,564	13,898	
Summit Milk Yield 1st	63.1	48.3	51.5	47.5	
Summit Milk Yield 2nd	79.0	70.0	69.5	61.4	
Summit Milk Yield 3rd	85.3	78.5	70.5	66.2	
Summit Milk Yield Avg.	74.5	69.0	62.8	60.1	
Income/Feed Cost	1,916	1,664	1,358	1,369	
SCC Average	568	412	534	504	
Days to 1st Service	79	49	65	90	
Days Open	197	220	156	221	
Projected Calving Interval	15.7	16.4	14.3	16.5	
Guernsey					
Rolling Herd Average	19,846	13,454	12,699	11,807	
Summit Milk Yield 1st	0.00	45.5	49.0	49.5	
Summit Milk Yield 2nd	0.00	55.0	52.0	56.0	
Summit Milk Yield 3rd	92.0	58.0	56.0	61.5	
Summit Milk Yield Avg.	92.0	53.5	53.0	58.0	
Income/Feed Cost	—	1,204	1,265	1,240	
SCC Average	76	197	484	339	
Days to 1st Service	110	103	74	108	
Days Open	110	188	156	212	
Projected Calving Interval	12.8	15.4	14.4	16.2	
Holstein					
Rolling Herd Average	22,971	20,028	17,793	14,257	
Summit Milk Yield 1st	72.2	65.6	59.5	51.8	
Summit Milk Yield 2nd	92.0	83.2	73.3	62.2	
Summit Milk Yield 3rd	97.4	87.8	78.6	67.4	
Summit Milk Yield Avg.	86.4	78.3	70.4	62.0	
Income/Feed Cost	2,116	1,744	1,531	1,133	
SCC Average	363	414	453	629	
Days to 1st Service	94	95	96	98	
Days Open	172.5	178	183	213	
Projected Calving Interval	14.8	15.0	15.1	16.2	
Jersey					
Rolling Herd Average	16,864	14,485	13,066	11,289	
Summit Milk Yield 1st	53.4	42.3	44.1	40.7	
Summit Milk Yield 2nd	58.8	58.6	55.9	45.9	
Summit Milk Yield 3rd	72.6	57.7	51.4	53.0	
Summit Milk Yield Avg.	64.2	56.7	52.3	47.3	
Income/Feed Cost	2,074	1,748	1,389	1,044	
SCC Average	341	381	410	643	
Days to 1st Service	86	71	78	98	
Days Open	147	134	167	174	
Projected Calving Interval	14.0	13.6	14.7	14.9	
Milking Shorthorn					
Rolling Herd Average	14,319	13,829	13,826	9,251	
Summit Milk Yield 1st	48.0	52.0	53.0	48.0	
Summit Milk Yield 2nd	65.0	63.0	63.0	55.0	
Summit Milk Yield 3rd	77.0	65.0	64.0	63.0	
Summit Milk Yield Avg.	65.0	60.0	60.0	57.0	
Income/Feed Cost	1,592	1,494	1,478	—	
SCC Average	273	308	278	396	
Days to 1st Service	84	106	104	115	
Days Open	124	127	126	181	
Projected Calving Interval	13.3	13.4	13.4	15.2	

Hay Prices*—Kansas

	Location	Quality	Price ($/ton)
Alfalfa	Southwestern Kansas	Supreme	125-135
Alfalfa	Southwestern Kansas	Premium	110-120
Alfalfa	Southwestern Kansas	Good	95
Alfalfa	South Central Kansas	Supreme	120-135
Alfalfa	South Central Kansas	Premium	100-125
Alfalfa	South Central Kansas	Good	80-85
Alfalfa	Southeastern Kansas	Supreme	110-120
Alfalfa	Southeastern Kansas	Premium	100-110
Alfalfa	Southeastern Kansas	Good	—
Alfalfa	Northwestern Kansas	Supreme	110-120
Alfalfa	Northwestern Kansas	Premium	100-110
Alfalfa	Northwestern Kansas	Good	70-85
Alfalfa	North Central Kansas	Supreme	115-130
Alfalfa	North Central Kansas	Premium	100-115
Alfalfa	North Central Kansas	Good	70-80

Supreme = over 180 RFV (less than 27 ADF)
Premium = 150–180 RFV (27–30 ADF)
Good = 125–150 RFV (30–32 ADF)

Source: USDA Kansas Dept. of Ag Market News Service Report, *January 8, 2002*

Hay Prices—Oklahoma

	Location	Quality	Price ($/ton)
Alfalfa	Central/Western, OK	Premium	110-120
Alfalfa	Central/Western, OK	Good	100-110
Alfalfa	Panhandle, OK	Premium	110-120
Alfalfa	Panhandle, OK	Good	100-115

Source: Oklahoma Department of Ag-USDA Market News Service, *Jan. 3, 2002*

Feed Stuffs Prices

	Location	Price ($/ton)
Blood Meal	Central US	290-295
Corn Gluten Feed	Kansas City	69-71
Corn Gluten Meal	Kansas City	255-260
Corn Hominy	Kansas City	76-78
Cotton Seed Meal	Kansas City	164-167
Whole Cotton Seed	Memphis	103
Distillers Grains	Nebraska	85-90
Pork—Meat and Bone Meal	Texas Panhandle	156-160
SBM 48%	Kansas City	153-155
Wheat Middlings	Kansas City	60-65

Source:USDA Market News Service, *January 9, 2002*

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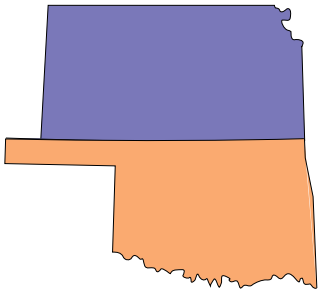

Kansas State University
K-State Research & Extension
Department of Animal Sciences and Industry
Call Hall, Room 139
Kansas State University
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John Smith
Extension Specialist
Dairy Science
K-State

Mike Brouk
Extension Specialist
Dairy Science
K-State

Dan Waldner
Extension Specialist
Dairy Science
Oklahoma State

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