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Dairy Lines

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Western Dairy Managment Conference
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Reno, NV

Oklahoma Youth Expo Dairy Show
March 17-18
State Fairgrounds
Oklahoma City, OK

DAIRY RESEARCH & EXTENSION NEWS
http://www.oznet.ksu.edu/dp_ansi/dairylin.htm

Colostrum management key to passive immunity transfer

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Without question, the single most important management practice affecting a calf's healthy start in life is colostrum management. Unlike human babies, newborn calves receive no protective immunoglobulins (IgG) or antibodies from their mother through the placenta before birth. So a calf's only protection against the infectious microorganisms it is exposed to immediately after birth is via the IgG in colostrum. Not until two to three weeks of age will IgG produced by the calf's own immune system begin to show up to continue protection throughout life.

The acquisition of IgG from colostrum through gut absorption is called passive immunity. It is possible to determine successful transfer of passive immunity by measuring the concentration of IgG in the serum of calves at 24 to 48 hours after birth. The critical level for determining failure of passive transfer (FPT) of immunity is considered to be 10 mg/mL (1,000 mg/dL or 10 g/L).

Unfortunately, studies show that the acquisition of passive immunity is often inadequate in young calves. Results of a survey in which serum IgG concentrations were measured in 2,177 newborn calves showed that 41 percent of all calves sampled had IgG concentrations below the recommended level of 10 mg/mL. In addition, this study showed that calves with serum IgG concentrations greater than 10 mg/mL had significantly greater survival rates at eight weeks of age than those with serum IgG concentrations less than 10 mg/mL (see Figure 1 on page 2).

Failure of passive transfer may be attributed to several factors. The three most important factors affecting serum IgG concentration in calves include age at which colostrum is consumed, colostral IgG concentration, and volume of colostrum fed.

Timing of colostrum feeding is critical since the ability of the calf's intestine to absorb IgG declines rapidly so that by 24 hours after birth, the absorption rate is essentially zero. The maximum IgG concentration in serum of calves fed a given amount of colostrum decreases by about 10 percent as feeding is delayed from immediately after birth to four hours after birth, and declines another 15 to 20 percent as first feeding is delayed to eight hours after birth. Currently, the Bovine Alliance on Management and Nutrition (BAMN) recommends providing the first feeding of colostrum as soon after birth as possible, preferably within one hour, and an additional feeding 12 hours later.

The practice of leaving the calf with the mother, which has been shown to improve the calf's ability to absorb colostral IgG, does not ensure the calf receives an adequate amount of colostrum. In a survey of dairy herds, researchers showed that the length of

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time a cow and calf remain together after birth has a profound effect on heifer calf mortality. The mortality rate at one week of age for calves left with the dam more than 24 hours was two times greater than for calves that remained with the dam for two to six hours (2.7 vs. 6.2 percent) and more than three times greater for the entire six-month period of the survey (5.2 vs. 17.4 percent).

Of course interpretation of this data can be misleading, because early separation of the calf from the dam will not reduce mortality unless sound colostrum management practices are followed. But in support of the idea that calves do not readily consume enough colostrum when left to their own devices, a survey on the distribution of serum IgG concentrations in calves that were allowed to nurse before additional colostrum feeding showed that more than 44 percent of the calves left with the dam for 12 to 26 hours had serum IgG concentration less than 5.9 mg/mL — substantially lower than the recommended threshold of 10 mg/mL for determination of FPT.

Not all colostrum is created equal. Indeed, there are numerous factors that can affect colostrum quality including parity, season, breed, and volume of colostrum produced. Research from Washington indicated the average concentration of IgG_1 (a sub-fraction of IgG) in colostrum from Holstein cows was 48.2 mg/mL, with a range of 20 to more than 100 mg/mL. A Tennessee study measured colostrum from Jersey cows and found that samples averaged 66 mg/mL of IgG, with a range of 28 to 115 mg/mL.

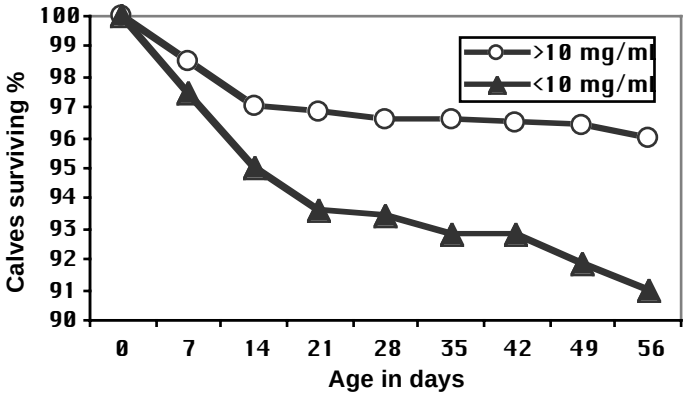
On the basis of the distribution of colostrum quality in the Washington study, researchers calculated the percentages of colostrums that would provide 100 g of IgG when 2, 3 or 4 quarts were fed at the first feeding. Data indicate that only 29 percent of the calves fed 2 quarts and only 70 percent of calves fed 3 quarts of colostrum would be provided enough IgG to prevent FPT when colostrum quality is not specifically known.

The most reliable on-farm method of evaluating colostrum quality is the use of a colostrometer. A colostrometer measures the specific gravity of the colostrum and estimates the concentration of IgG based on a statistical relationship. This relationship is not perfect, however, and research indicates that the volume of colostrum produced will influence colostral IgG concentration. In general, colostrum produced in large volumes (more than 18 pounds) will have lower IgG concentration than colostrum produced in smaller volumes. So it is suggested to use both the colostrometer and the amount of colostrum produced in order to get a better picture of colostrum quality and increase the chance of reducing FPT.

The issue on how much to feed is important. Optimal on-farm strategies to ensure adequate transfer of passive immunity are somewhat controversial. The traditional recommendation has been to feed 2 quarts of colostrum as soon as possible after birth and then again 12 hours later. But because of the frequency of FPT when feeding colostrum with unknown IgG content, some recommend feeding 4 quarts of colostrum immediately after birth followed by a second feeding of 2 quarts 12 hours later. Currently, the BAMN suggest feeding at least 3 quarts of colostrum at the first feeding and again 12 hours later. The 2001 NRC also suggests feeding 3 quarts of colostrum at the first feeding, but indicate that Holstein calves could be administered as much as 4 quarts of colostrum in a single feeding within an hour after birth to ensure sufficient delivery of IgG.

If death losses from birth to through weaning are greater than 5 percent, producers should critically evaluate their colostrum management program. Once a colostrum management protocol is in place, producers can evaluate their program using a refractometer or serum IgG test kit to determine if successful passive transfer is occurring, then adjust the program as needed.

Figure 1. Survival of calves with adequate (>10mg/mL) or inadequate (<10 mg/mL) IgG concentrations in serum (NAHMS, 1993).



Heart of America Dairy Herd Improvement Summary

	Quartiles				Your Herd
	1	2	3	4	
Ayrshire					
Rolling Herd Average	18,835	15,953	15,024	11,525	
Summit Milk Yield 1st	68.0	57.0	53.5	25.5	
Summit Milk Yield 2nd	85.0	68.0	32.5	28.0	
Summit Milk Yield 3rd	80.0	76.0	38.0	59.0	
Summit Milk Yield Avg.	79.5	67.0	64.5	58.0	
Income/Feed Cost	1,192.5	804.5	770	669	
SCC Average	175.5	222	295.5	81	
Days to 1st Service	70.5	87	39	109	
Days Open	133.5	111.5	126	158	
Projected Calving Interval	13.6	12.9	13.35	14.4	
Brown Swiss					
Rolling Herd Average	21,241	19,152	15,889	13,076	
Summit Milk Yield 1st	62.33	55.14	50.86	45.29	
Summit Milk Yield 2nd	84.5	70.57	70.29	56.14	
Summit Milk Yield 3rd	75.0	78.29	71.0	64.0	
Summit Milk Yield Avg.	78.67	68.43	63.86	57.29	
Income/Feed Cost	1,494.6	1,411.43	1,137	923	
SCC Average	349	387.57	350.17	393	
Days to 1st Service	77.83	68.29	79.43	55.0	
Days Open	162.17	178.29	171.14	194.14	
Projected Calving Interval	14.53	15.07	14.84	15.59	
Guernsey					
Rolling Herd Average	17,380	13,386	12,921	12,256	
Summit Milk Yield 1st	57.0	50.0	44.0	47.0	
Summit Milk Yield 2nd	66.0	62.0	58.0	54.5	
Summit Milk Yield 3rd	73.0	56.5	62.5	60.5	
Summit Milk Yield Avg.	66.0	55.5	56.5	53.5	
Income/Feed Cost	1,294	1,019.5	962.5	977	
SCC Average	438	326	271	698	
Days to 1st Service	111	120	79.0	97.5	
Days Open	172	191	148	200	
Projected Calving Interval	14.9	15.5	14.05	15.8	
Holstein					
Rolling Herd Average	23,349	20,482	18,222	15,001	
Summit Milk Yield 1st	73.33	66.06	61.06	53.08	
Summit Milk Yield 2nd	94.47	84.4	76.02	64.27	
Summit Milk Yield 3rd	98.56	89.59	80.93	69.79	
Summit Milk Yield Avg.	87.3	79.64	72.62	63.41	
Income/Feed Cost	1,695.39	1,401.91	1,163.14	882.63	
SCC Average	349.74	380.33	400.7	521.68	
Days to 1st Service	91.46	94.27	93.64	93.94	
Days Open	169.88	168.91	184.18	197.88	
Projected Calving Interval	14.8	14.77	15.27	15.72	
Jersey					
Rolling Herd Average	17,772	15,132	13,379	10,308	
Summit Milk Yield 1st	55.7	49.91	47.3	34.0	
Summit Milk Yield 2nd	67.8	60.64	55.7	43.45	
Summit Milk Yield 3rd	73.7	65.45	61.4	47.82	
Summit Milk Yield Avg.	65.2	59.36	55.2	49.0	
Income/Feed Cost	1,551.5	1,476.2	822.43	636.38	
SCC Average	301.7	270.64	413.6	327.73	
Days to 1st Service	86.8	89.09	75.5	84.0	
Days Open	158.6	137.82	140.9	158.91	
Projected Calving Interval	14.43	13.76	13.84	14.45	
Milking Shorthorn					
Rolling Herd Average	16,357	15,524	14,582	11,332	
Summit Milk Yield 1st	55.0	53.5	51.0	25.5	
Summit Milk Yield 2nd	67.0	66.5	64.0	63.5	
Summit Milk Yield 3rd	76.0	71.0	76.0	61.0	
Summit Milk Yield Avg.	70.0	64.5	66.5	61.5	
Income/Feed Cost	796.0	1,076.5	1,268.5	352.0	
SCC Average	642	221	236.5	343.5	
Days to 1st Service	51	66.5	82.5	66.5	
Days Open	150	131	121	99.5	
Projected Calving Interval	14.1	13.55	13.25	12.5	

Hay Prices*—Kansas

	Location	Quality	Price ($/ton)
Alfalfa	Southwestern Kansas	Supreme	110-120
Alfalfa	Southwestern Kansas	Premium	95-110
Alfalfa	Southwestern Kansas	Good	75-80
Alfalfa	South Central Kansas	Supreme	110-120
Alfalfa	South Central Kansas	Premium	100-110
Alfalfa	South Central Kansas	Good	65-75
Alfalfa	Southeastern Kansas	Supreme	110-120
Alfalfa	Southeastern Kansas	Premium	95-110
Alfalfa	Southeastern Kansas	Good	—
Alfalfa	Northwestern Kansas	Supreme	100-120
Alfalfa	Northwestern Kansas	Premium	100-110
Alfalfa	Northwestern Kansas	Good	80
Alfalfa	North Central Kansas	Supreme	100-120
Alfalfa	North Central Kansas	Premium	100-110
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 21, 2003

Hay Prices—Oklahoma

	Location	Quality	Price ($/ton)
Alfalfa	Central/Western, OK	Premium	—
Alfalfa	Central/Western, OK	Good	80-95
Alfalfa	Panhandle, OK	Premium	105-120
Alfalfa	Panhandle, OK	Good	85-100

Source: Oklahoma Department of Ag–USDA Market News Service, January 16, 2003

Feed Stuffs Prices

	Location	Price ($/ton)
Pork Blood Meal	Texas Panhandle	331
Corn Gluten Feed	Kansas City	75-87
Corn Gluten Meal	Kansas City	265-275
Corn Hominy	Kansas City	84-85
Cotton Seed Meal	Kansas City	170-184
Whole Cotton Seed	Memphis	145
Distillers Grains	Nebraska	110-115
Pork—Meat and Bone Meal	St. Louis	180-200
SBM 48%	Kansas City	170-177
Wheat Middlings	Kansas City	69-71

Source: USDA Market News Service, January 22, 2003

The authors of Dairy Lines have decided to make the newsletter available electronically to reduce costs and allow for quicker access to the newsletter. For those who do not have access to e-mail, a printed version will still be available.

In order to receive the newsletter via e-mail, please contact Tamie Redding at tredding@oznet.ksu.edu or (785) 532-1280 and you will be added to the electronic newsletter.

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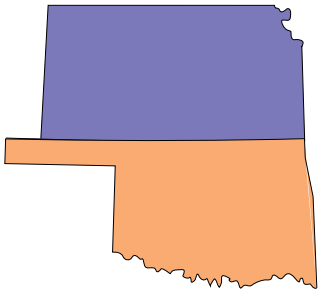

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Dairy Lines

DAIRY RESEARCH AND EXTENSION NEWS
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2003 Western Dairy Management Conference

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REGISTRATION—March 11, 3:00 p.m.–10:00 p.m.; March 12–13, 6:30 a.m.–5:00 p.m.; March 14, 7:30 a.m.–Noon

SEMINAR SCHEDULE—March 12–13 , 8:00 a.m.–5:00 p.m.; March 14, 8:00 a.m.–Noon (Seminars will be presented twice during the conference to accommodate everyone's schedule.)

Nutrition

- Transition cows–the good, the bad, and when it gets ugly, Tom Overton, Cornell University
- Practical forage quality for high-producing cows, Randy Shaver, University of Wisconsin
- Processing, storing and feeding out silage for results, Keith Bolson, Kansas State University
- Evaluating your feeding programs, Mary Beth Hall, University of Florida
- Feeding market cows for increased profit, Mike Looper, University of Arkansas

Replacement Heifers

- New strategies for feeding newborn calves and heifers, Mike Van Amburgh, Cornell University
- Maintaining dairy calf health and sanitation, Sam Leadley, New York
- Meeting the demand for dairy replacements (producer panel) Joe Dalton, University of Idaho

Managing Reproduction for Success

- Monitoring reproduction from the starting gate, Paul Fricke, University of Wisconsin
- Reproduction management opportunities, Phil Senger, Washington State University
- Management of natural service bulls on large dairies, Peter Chenoweth, Kansas State University

Milking Equipment and Facilities

- Selecting and managing your milking facility, John Smith, Kansas State University
- Managing mastitis in today's parlors, David Reid, Consulting Veterinarian, Wisconsin
- Effectiveness of cow cooling strategies under different environmental conditions, Mike Brouk, Kansas State University

Herd Health

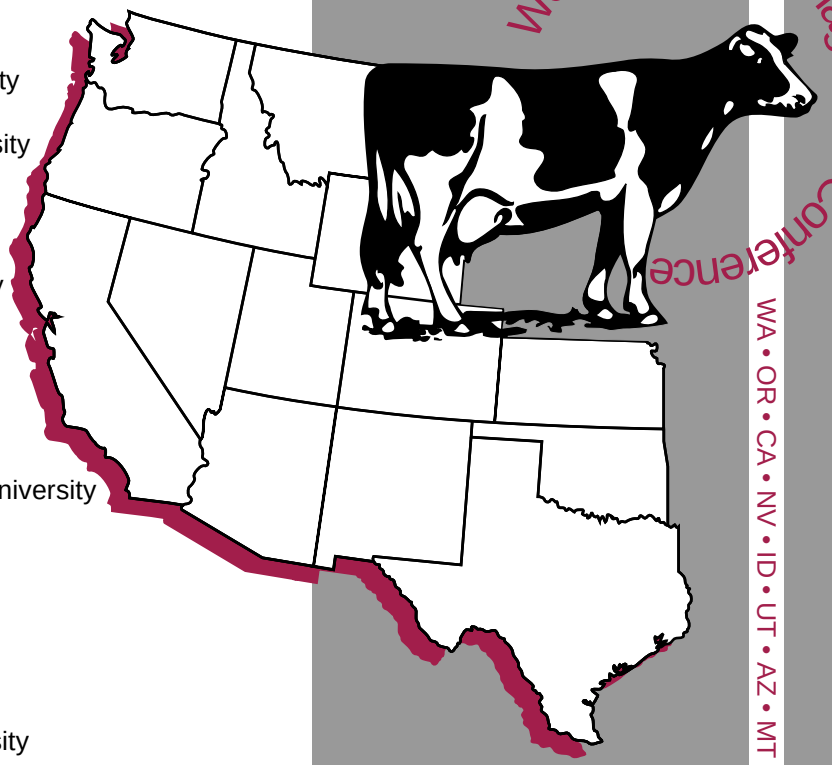
- Managing persistent leptospirosis in the dairy herd, Carole Bolin, Michigan State University
- Managing mycoplasma infections–calf to cow, Mark Wustenberg, Oregon
- Jejunal hemorrhagic syndrome in adult dairy cows, Sandra Godden, University of Minnesota
- Managing lameness for animal comfort and performance, Jan Shearer, University of Florida

Manure Management

- Manure technologies for today and tomorrow, Deanne Meyer, University of California–Davis

Business and Personnel Management

- Farm animal welfare assurance including the retail perspectives, Janice Swanson, Kansas State University
- Practical dairy farm biosecurity, Dick Wallace, University of Illinois
- Handling dairy problems–case studies (panel discussion) Dennis Armstrong, Arizona



2003 Western Dairy Management Conference

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JOHN ASCUAGA'S NUGGET
Reno,
Nevada

March 12–14, 2003

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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Room reservations—800-648-1177 or http://www.janugget.com—ask for Western Dairy Management Conference block—$93 + tax, single or double. ***Make reservations by 2/10/03.***

Registration Form

6th Western Dairy Management Conference
March 12–14, 2003 • Reno, Nevada

Name _____

Farm/business name _____

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Telephone number _____

E-mail _____

Number of cows milked _____

Check the following categories & total for payment:

Registration fee—$250/person by 2/3/03 ..... _____
(includes two lunches, three breakfasts, and one proceeding)
After 2/3/03—$275/person
No refunds after 2/3/03

Extra copies of proceedings—$25 each ..... _____

Conference Shirts—***indicate quantity and size***
(must be ordered prior to conference).
Generic mens' and ladies' sizes: XXL, XL, L, M, S, XS
Longsleeve Denim w/Logo Shirt—$40 ..... _____
Shortsleeve Polo w/Logo Shirt—$35 ..... _____

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