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Dairy Lines

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DAIRY RESEARCH & EXTENSION NEWS

http://www.oznet.ksu.edu/dp_ansi/dairylin.htm

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Upcoming Events

Oklahoma State University
63rd Annual Dairy Day
October 27—Pryor, OK
October 28—Chickasha, OK

K-State Research and Extension
1999 Dairy Day
November 17—Whiteside, KS
November 18—Hillsboro, KS
November 19—Seneca, KS

Mastitis and its Control

Dan Waldner

Telling a dairy producer the importance of an effective mastitis control program is like telling a mechanic the importance of preventative car maintenance. Still, mastitis is one of the most costly diseases of the dairy industry. Recent estimates put the economic loss to producers at $200/infected cow/year. It is easy to get complacent when everything is running well, but sooner or later you are bound to have a flare-up. After all, even the best mechanics have car trouble once in a while.

Types of Mastitis

There are two types of mastitis—clinical and subclinical. Both types are accompanied by elevated somatic cell counts (SCC) in milk, which can greatly reduce production (Table 1). Clinical mastitis is visible and is characterized by flakes or clots in the milk and hardness and swelling of the udder. While it is the type with which we are most familiar, it only accounts for about 2 percent of the infections at any one time. Subclinical mastitis, however, is the "hidden type" where quarters are infected with a mastitis-causing organism although there are no visible signs of infection. This type of mastitis accounts for approximately 98 percent of the udder/mammary gland infections and approximately 70 percent of the milk production loss from mastitis. In short, if proper mastitis monitoring and control procedures are not being used, significant production losses can be incurred without even knowing it.

The Culprits

It is estimated that over 90 percent of the cases of mastitis in dairy cattle are caused by the bacteria *Staphylococcus aureus, Streptococcus agalactiae, Streptococcus dysgalactiae,* or *Streptococcus uberis.* These bacteria can be categorized into two groups—contagious and environmental. *Staphylococcus aureus* and *Strep. agalactiae* are contagious mastitis pathogens for which the major reservoir is the infected udder. Infections of this type tend to be chronic and subclinical but with periodic clinical episodes. Infections are spread among cows during the milking process. Following proper milking procedures and periodic milking, equipment checks are essential for preventing the spread of contagious mastitis to uninfected cows.

Table 1. Losses in Milk Production Associated with Elevated Somatic Cell Counts (SCC).

SCC	Estimated Milk Loss (lbs./cow/lactation)[a]
100,000	400
200,000	800
400,000	1,200
800,000	1,600
1,600,000	2,000

Source: Dairy Reference Manual, Third Edition, 1995.
[a] Based on 305-day lactation, in second or later lactations.

Studies have shown treatment of *Strep. agalactiae* with penicillin during lactation has a cure rate of 80 to 90 percent, and treatment at dry-off has a cure rate of 95 percent. The cure rate of *Staph. aureus* infected cows treated during lactation, however, is extremely low. While cows with abnormal milk and swollen quarters should be treated, the best opportunity to cure *Staph. aureus* infections is with dry cow therapy. Again, the success rate is not nearly as good as it is with *Strep. agalactiae.* Most herds with a *Staph. aureus* problem have chronically infected cows that will have to be culled. Dairy producers need to keep in mind that infected cows (the majority of which are subclinical) serve as a source of infection for other cows. If cows can be milked last, milked with a separate claw, or even placed in a separate group until culled, this will greatly reduce the chances of spreading mastitis. Further, when purchasing cows, dairy producers need to be careful not to buy mastitic cows. There have been a lot of producers who have paid good money for their mastitis problems.

Streptococcus dysgalactiae and *Strep. uberis* are environmental pathogens for which the major reservoir is the environment of the cow (e.g. bedding, manure, and soil). Cases of environmental mastitis tend to be of shorter duration than contagious mastitis with approximately 50 percent showing clinical signs of infection. A high rate of clinical mastitis in early lactation or during hot weather is usually an indication of an environmental mastitis problem. Although

continued on page 2

Heart of America Dairy Herd Improvement Summary (September)

	Quartiles				Your Herd
	1	2	3	4	
Ayrshire					
Rolling Herd Average	18,008	14,496	11,657	8,231	
Summit Milk Yield 1st	61.0	51.5	41.0	38.0	
Summit Milk Yield 2nd	75.0	64.0	48.0	22.5	
Summit Milk Yield 3rd	81.0	64.0	57.0	26.5	
Summit Milk Yield Avg.	72.0	58.5	53.0	43.0	
Income/Feed Cost	1,767	1,266	1,118	409	
SCC Average	230	308	314	204	
Days to 1st Service	85	81	126	46.5	
Days Open	149	130	131	189	
Projected Calving Interval	14.1	13.5	13.5	15.4	
Brown Swiss					
Rolling Herd Average	19,641	15,723	14,340	12,752	
Summit Milk Yield 1st	60.0	54.3	47.4	46.6	
Summit Milk Yield 2nd	75.4	65.5	60.2	56.8	
Summit Milk Yield 3rd	84.0	71.5	65.0	52.8	
Summit Milk Yield Avg.	72.6	64.1	59.4	54.0	
Income/Feed Cost	1,912	1,658	1,321	1,223	
SCC Average	340	316	325	335	
Days to 1st Service	85	73	84	92	
Days Open	166	181	174	200	
Projected Calving Interval	14.6	15.1	14.9	15.8	
Guernsey					
Rolling Herd Average	15,378	14,152	13,530	11,558	
Summit Milk Yield 1st	54.0	51.0	50.0	44.0	
Summit Milk Yield 2nd	64.0	61.5	56.0	58.0	
Summit Milk Yield 3rd	67.0	64.5	61.0	62.5	
Summit Milk Yield Avg.	61.0	58.0	57.0	54.0	
Income/Feed Cost	1,796	1,146	1,670	1,248	
SCC Average	181	225	375	292	
Days to 1st Service	87	109	60	86	
Days Open	162	176	136	203	
Projected Calving Interval	14.5	15.0	13.7	15.9	
Holstein					
Rolling Herd Average	22,600	19,708	17,567	14,250	
Summit Milk Yield 1st	72.1	65.2	59.0	50.8	
Summit Milk Yield 2nd	91.9	82.6	71.9	61.7	
Summit Milk Yield 3rd	97.5	87.1	78.8	67.7	
Summit Milk Yield Avg.	85.5	77.5	70.6	61.1	
Income/Feed Cost	2,193	1,818	1,603	1,238	
SCC Average	342	369	403	498	
Days to 1st Service	87	89	92	80	
Days Open	168	166	176	200	
Projected Calving Interval	14.7	14.7	15.0	15.8	
Jersey					
Rolling Herd Average	16,641	14,245	12,403	10,047	
Summit Milk Yield 1st	46.2	42.4	46.2	35.4	
Summit Milk Yield 2nd	64.3	50.8	50.8	41.3	
Summit Milk Yield 3rd	73.1	61.7	55.0	46.0	
Summit Milk Yield Avg.	64.5	55.9	50.7	41.4	
Income/Feed Cost	1,804	1,717	1,247	941	
SCC Average	320	271	371	526	
Days to 1st Service	78	94	62	68	
Days Open	141	132	150	146	
Projected Calving Interval	13.8	13.5	14.1	14.0	
Milking Shorthorn					
Rolling Herd Average	14,909	14,025	13,427	11,156	
Summit Milk Yield 1st	51.0	54.0	45.0	45.5	
Summit Milk Yield 2nd	51.0	67.0	56.0	53.5	
Summit Milk Yield 3rd	86.0	81.0	70.0	64.5	
Summit Milk Yield Avg.	61.0	65.0	57.0	56.0	
Income/Feed Cost	1,525	1,565	1,625	781	
SCC Average	139	320	289	230	
Days to 1st Service	93	71	81	55	
Days Open	118	115	129	114	
Projected Calving Interval	13.1	13.0	13.4	12.9	

new infections by environmental pathogens can occur at milking, primary exposure appears to be between milking. Basically, any measures that reduce the number of bacteria to which the teat end is exposed will go a long way in reducing the prevalence of environmental mastitis. Improving the cleanliness of the cows' surroundings, especially during the dry period and at calving has proven to be beneficial. Additionally, check prepping procedures to ensure clean, dry teats are being milked. Treatment of environmental mastitis during lactation will generally cure about 50 to 60 percent of the cases. Dry cow therapy eliminates the majority of infections present at drying off and significantly reduces the rate of new infections during the critical first two weeks of the dry period.

Monitoring and Diagnosis

Bulk tank SCC provide an excellent way to monitor herd udder health, but reveal little about the cows or quarters involved or the kinds of infections present. Better yet, Dairy Herd Improvement SCC on individual cows or cow-side tests such as the California Mastitis Test or Wisconsin Mastitis Test can be used to identify and track individual cows that may need treatment. However, even when individual SCC are available, treatment based solely on SCC is not economical. Culturing a bulk tank sample or samples from a portion of the cows for the type of bacteriological infections present in the herd will help to developing a control program and identify areas where management needs to be focused. All cows with clinical cases of mastitis or consistently high SCC should be cultured so that treatment can be applied, greatly increasing cure rates and reducing the chance of reoccurrence or spread of infection and additional losses in production. Contact your county agriculture extension educator or veterinarian for assistance on taking samples for culturing and advice on proper diagnosis and treatment. Monitoring SCC and identification of bacteria-causing mastitis are key in developing and implementing a successful mastitis control program.

Control Measures

While mastitis cannot be eliminated, an effective control program will dramatically reduce the prevalence of and economic loss from mastitis. Herd SCC should be kept below 200,000 cells per milliliter to achieve maximum production and milk quality. Control measures include:

1. Make sure milking equipment is functioning properly.
2. Provide a clean, stress-free environment for all cows.
3. Follow proper milking procedures.
4. Dip teats after milking with an effective germicidal teat dip.
5. Treat infected cows promptly and effectively; isolate and milk infected animals last if possible.
6. Treat all cows at drying off.
7. Cull chronically infected cows.
8. Feed a balanced ration; make sure selenium and vitamin E levels are adequate.
9. Keep records.

Remember, implementing a good mastitis program will mean money in your pocket!

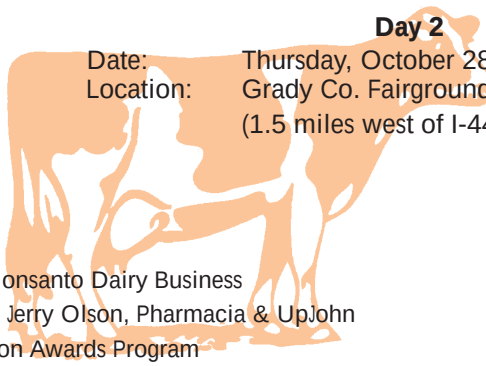
Hay Prices—Kansas*

	Location	*Quality*	*Price ($/ton)*
Alfalfa	Southwestern Kansas	Supreme	95–105
Alfalfa	Southwestern Kansas	Premium	65–90
Alfalfa	Southwestern Kansas	Good	—
Alfalfa	South Central Kansas	Supreme	95–100
Alfalfa	South Central Kansas	Premium	75–90
Alfalfa	South Central Kansas	Good	65–75
Alfalfa	Southeastern Kansas	Supreme	90–95
Alfalfa	Southeastern Kansas	Premium	80–90
Alfalfa	Southeastern Kansas	Good	65–75
Alfalfa	Northwestern Kansas	Supreme	50 cents/pt RFV
Alfalfa	Northwestern Kansas	Premium	80–90
Alfalfa	Northwestern Kansas	Good	70–75
Alfalfa	North Central Kansas	Supreme	50 cents/pt RFV
Alfalfa	North Central Kansas	Premium	65–90
Alfalfa	North Central Kansas	Good	60–70

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 Hay Market Report, *September 28, 1999*

OKLAHOMA STATE UNIVERSITY 63rd ANNUAL DAIRY DAY



Day 1

Date: Wednesday, October 27, 1999
Location: Northeast Vo-Tech Center, Pryor, OK
(6 miles west of Pryor, OK on Hwy 20)

Day 2

Date: Thursday, October 28, 1999
Location: Grady Co. Fairgrounds, Chickasha, OK
(1.5 miles west of I-44 and Hwy 62 jct.)

Program:

9:00 a.m.	Registration*/Exhibits Open
9:55 a.m.	Welcome
10:00 a.m.	**Managing the 30,000 lb. Herd,** Brian Perkins, Monsanto Dairy Business
11:00 a.m.	**Reproductive Management: The First 100 Days,** Jerry Olson, Pharmacia & UpJohn
12:30 p.m.	Lunch—Visit Exhibits/Milk Quality and Production Awards Program
1:30 p.m.	**Futures Contracts and Other Instruments to Manage Price Risk,** Bill Brooks, Independent Market Consultant
2:30 p.m.	Adjourn—Visit Exhibits

Registration: *$10/person, $15/couple, children under 12—free. Registration includes lunch and 1 copy of proceedings. Extra copies of proceedings may be purchased for $5 each.*

Oklahoma Cooperative Extension Service
Divison of Agriculture and Natural Resources
Animal Science Department
Oklahoma State University

K-STATE DAIRY DAYS

Day 1

Date: November 17, 1999
Location: Amish Community Bldg., Whiteside, KS
(Reno County)—Greg McCormack

Day 2

Date: November 18, 1999
Location: United Methodist Church, Hillsboro, KS
(Marion County)—Steve Tonn

Day 3

Date: November 19, 1999
Location: Valentino's, Seneca, KS
(Nemaha County)—David Key

Program:

10:00 a.m.	Registration
10:25 a.m.	Welcome
	Applications of Timed AI for Dairy Cows, Jeff Stevenson, Animal Sciences, KSU
	Designing and Constructing Feedline Cooling Systems, Joe Harner, Biological/ Agricultural Engineering, KSU
Noon	Lunch—Sponsored by the Kansas Dairy Association (KDA)
	Expansion Issues on Kansas Dairy Farms, John Smith, Animal Sciences, KSU
	Dry Cow Feeding and Management, John Shirley, Animal Sciences, KSU
	Responses of Dairy Cows to Different Cooling Systems, Mike Brouk, Animal Sciences, KSU
2:30 p.m.	Adjourn

K-STATE Kansas State University Research and Extension

Feed Stuffs Prices

	Location	*Price ($/ton)*
Blood Meal	Texas Panhandle	276–300
Corn Gluten Feed	Kansas City	60–62
Corn Gluten Meal	Kansas City	255–265
Corn Hominy	Kansas City	60–62
Cotton Seed Meal	Kansas City	131–134
Whole Cotton Seed	Memphis	100
Distillers Grains	Central Illinois	82–86
Pork—Meat and Bone Meal	Texas Panhandle	140–160
SBM 48%	Kansas City	144–149
Wheat Middlings	Kansas City	49–53

Source: USDA Feedstuff Market Review, *September 29, 1999*

Hay Prices—Oklahoma

	Location	*Quality*	*Price ($/ton)*
Alfalfa	Central / Western, OK	Premium	80–100
Alfalfa	Central / Western, OK	Good	75–85
Alfalfa	Panhandle, OK	Premium	80–90
Alfalfa	Panhandle, OK	Good	70–80

Source: Oklahoma Department of Agriculture, *September, 1999*

COOPERATIVE EXTENSION SERVICE
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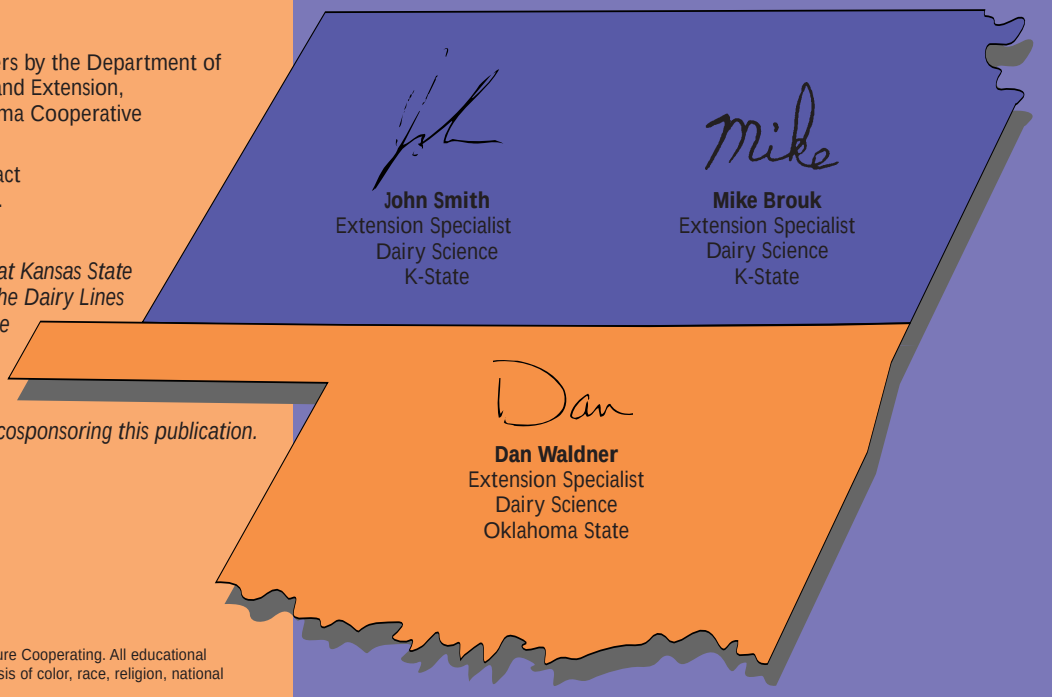

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