GEA Farm Technologies

milk QUALITY SPECIALIST newsletter

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$1,000/Cow Potential

A drop to 150,000 SCC *can* yield that much - even at $10 milk, one case of clinical mastitis costs $120 to $145. (Article reprint from Dairy Today by Jim Dickrell.)

If you don't think you can afford to lower your herd's somatic cell count to 150,000 cells/ml, Earl Aalseth has news for you.

"Lowering a 1,000-cow herd's SCC average from 300,000 to 150,000 can potentially yield $1 million per year in net revenue, once you count up lost milk, drugs, reproductive failures, culls, lost milk from culls, dead cows and quality bonuses," he says. Aalseth is a dairy veterinarian based in Lake Stevens, Washington. His consulting business covers the country.

For one client, he recently tallied up the financial opportunity represented by a parlor plagued with chronic problems. The SCC in the herd, milking 1,200 cows, had climbed from just 150,000 to 350,000 in two years. Aalseth's total [loss] came to $812,000 on a 12-month basis, including:

- Lost milk production from the jump in SCC: $360,000.
- Pregnancy rates plummeted from a normal rate of 18% to nearly half that level: $254,000.
- Milk loss from culled mastitis cows: $106,000.
- Mastitis treatment costs and lost milk from treated cows: $36,000.
- Lost quality bonuses: $56,000.

"The lost bonuses are not worth much, not even 10% of the total costs," Aalseth says. Most producers look at quality bonuses as a way to evaluate whether to push for lower cell counts, he adds. But they're missing much higher potential costs by not managing for low cell counts all along. For example, for every 100,000 rise in the cell count, you will add 1% of your herd to the hospital pen.

In a spreadsheet developed by Dutch researchers Henk Hogeveen and Kirsten

Lowering a 1,000-cow herd's SCC from 300,000 to 150,000 can yield $1 million per year in net revenue.

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Q & A With National Dairy Quality Award Winners

For the last 15 years, the NDQA program has honored dairy producers who have successfully placed top-priority on producing the highest quality milk. In a recent round table discussion published in Hoard's Dairyman magazine, the Platinum winning producers answered questions on how they achieve such exemplary results. Below see how they specifically keep their SCC low and milk quality high, by maintaining healthy teat ends.

Q: How do you maintain healthy teats?

A: Shirley and Tom Carson, Hesperia, MI - The milking system is checked twice a year, inflations changed every other month, and udder cream is used for sore or dry teats.

A: Jim and Karen Davenport, Ancramdale, NY - Proper prepping, and machines are attached to plump teats. Units are properly positioned and removed via vacuum shutoff first and then gravity. We use a 60:40 pulsation ratio.

A: Tim, Michele, and Chris McDonald, Greenwich, NY - We check for proper vacuum levels each milking, never overmilk, fix squawks immediately, keep udders clean and dry, and use postdip with emollients.

A: Michigan State University, East Lansing, MI - Using good postdip and regular maintenance of equipment by dealer. Change inflations at half the rated lifespan.

A: Michael and George Prince, Tillamook, OR - We change liners every four weeks no matter what, monitor vacuum and pulsation, check for bad liners/air tubes with holes, and use a good barrier dip. Most importantly, I am always watching and looking.

A: Kenneth and Ralph Schefers, Paynesville, MN - We use milking equipment noted for gentle cow milking, don't overmilk, and use post-dip which promotes good teat end health.

A: Dean and Patti Tohl, Tillamook, OR - Milking equipment is checked regularly for proper operation, regular inflation changes limit liner slip, detacher settings are checked regularly to avoid overmilking, we ensure milk letdown before attaching machines, and use no harsh chemicals on udders.

A: VanPolen Family, Marion, MI - We make sure cows are milked out properly, not leaving milking units on too long. We use a postdip with emollients and are sure stalls are clean and dry which leaves udders and teats clean.

Herd size for the farms above range from 38 - 585 cows. SCC averages range from 51,000 to 86,000. GEA Farm Technologies (WestfaliaSurge) is a long-time supporter and major sponsor of the NDQA program.

The answer portion of this article is from the Hoard's Dairyman January 10, 2009 issue (NDQA round table, "Eight that do great on quality"). For more information on the winners, or NDQA visit the NMC web site at www.nmconline.org.

Huijps, the cost of a clinical case of mastitis is significant, even at $10/cwt. milk. They estimate that one clinical case of mastitis costs between $120 and $145, depending on feed costs. At $15/cwt. milk, those losses average $200/case.

(For spreadsheet visit the Dairy Today web site: http://www.agweb.com/DairyToday/Article.aspx?id=150209

Most producers don't equate high cell counts with lower reproduction. But a number of studies now show that once cell counts creep above 300,000 or so, pregnancy rates can drop to single digits, particularly in summer.

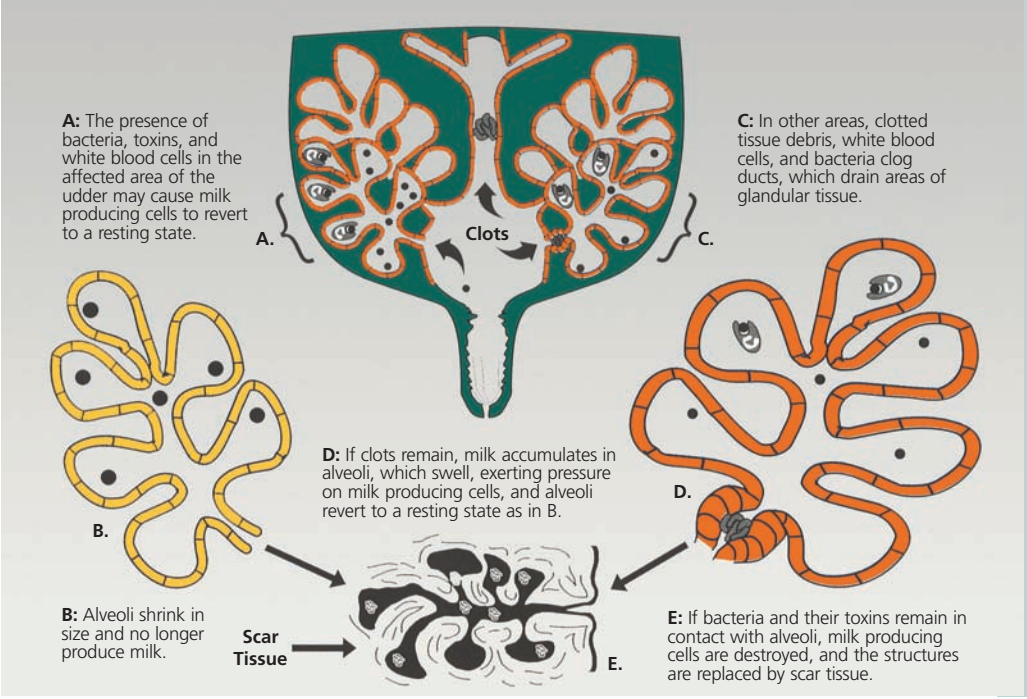
The extended days in milk, as cows struggle to conceive, are hidden costs, Aalseth says. But they can be deadly to a dairy in times when break-evens to cover feed costs climb from 35 lb. to 50 lb. or even 60 lb. of milk/cow/day. All of a sudden, those lower-producing cows, especially if they're open, become a financial drain on the dairy.

- Reprinted with permission from the April 2009 issue of Dairy Today ($1,000/Cow Potential by Jim Dickrell).

Individual Cow Production Losses

Daily Yield Loss

SCC	Heifers	Older Cows
100,000	0.6 lb.	1.3 lb.
200,000	1.3 lb.	2.6 lb.
400,000	2.0 lb.	3.9 lb.
800,000	2.6 lb.	5.2 lb.
1,600,000	3.3 lb.	6.6 lb.
3,200,000	3.9 lb.	7.9 lb.
6,400,000	4.6 lb.	9.2 lb.



Reduced milk production accounts for 70% of the total loss associated with mastitis.

After milk producing cells are destroyed, alveolar structures are permanently replaced by scar tissue, leading to reduced milk yield in the current lactation and in ALL future lactations.

How Does Mastitis Lead to Lost Production?

Mastitis is a complex disease that can steal from an operation's profits in more ways than one. Reduced milk production, treatment costs, discarded milk, death and premature culling, decreased reproductive performance, and reduced milk quality/lost premium dollars are just a few of the primary culprits.

However, the side-effect producers should be focused on the most is the reduced milk production. It accounts for **70%** of the total financial loss associated with mastitis. Unfortunately, long-term reduced milk production is often not considered by producers because it occurs at a subclinical level (everything appears normal), and the loss is from less milk produced - which can be difficult to recognize. In other words, producers usually do not miss what they don't know they could have.

Perhaps if producers really understood what was happening inside the udder when an infection occurs (especially a subclinical infection which they cannot see) they would be more likely to place a greater importance on SCC improvement.

Udder Tissue's Response to Infection

When mastitis causing organisms infect the udder, the cow's immune system sends large number of white blood cells to the udder to help fight off the infection. When these white blood cells move from the blood vessels through the udder toward the damaged tissue, they accumulate around alveoli, ducts, and cisterns before entering milk. As these cells move across the tissue, they may release enzymes that cause local destruction of milk producing cells.

The presence of bacteria, toxins, white blood cells, and other byproducts of inflammation in the affected area may cause the remaining, healthy milk producing cells to revert to a resting state. In addition, tissue debris, white blood cells, and bacteria form clots that block ducts draining areas of milk secretory tissue.

If the bacteria are eliminated, and the inflammation goes down, the blocked ducts open, and milk production can return to normal in several days. However, if the infection persists, and the ducts remain blocked, milk accumulates in the alveoli, exerting pressure on the milk producing cells. Then, these cells revert to a resting state or may be destroyed, depending on the severity of the infection.

After milk producing cells are destroyed, alveolar structures are permanently replaced by scar tissue, leading to reduced milk yield in the current lactation and in ALL future lactations.

With this information, it is easy to see how the long-term effects of mastitis (especially subclinical mastitis) can have huge economic impacts on dairies with chronic infections as production yields can be dramatically reduced compared to their potential.

-Article Resources: Current Concepts of Bovine Mastitis, NMC, 1996. Winning the Fight Against Mastitis, Nickerson & Philpot, 2000.

Did you know?

Somatic cells in milk consist mostly of white blood cells and a small percentage of secretory epithelial cells that are shed from the udder. The white blood cells are attracted to the udder by the presence of infecting microorganisms. Their purpose is to engulf and kill the microorganisms. The somatic cell count (SCC) is the measurement used most commonly as an indicator of mastitis. Milk from uninfected quarters will generally have an SCC of less than 200,000 cells/ml.

Milk Quality Income Potential Worksheet

Many times, numbers speak louder than words. And, in order for milk quality changes to be implemented on a dairy, the producer needs to see the financial opportunities that are available by achieving top-notch milk quality levels. The following worksheet adapted from the University of Wisconsin's Milk Money program, helps to show the income potential available through increased milk quality bonus dollars, reduced production losses, and lower monthly costs due to clinical mastitis.

1) Potential Milk Quality Bonus $

A:	Maximum Available SCC Bonus or Premium (goal = 100,000 - 150,000 cells/ml)		$/cwt :
B:	SCC Bonus You Currently Receive (from last milk check)		$/cwt :
C:	Difference Between Maximum Bonus and Bonus Actually Received	(A - B) =	
D:	Hundredweight's Shipped Last Month (monthly lbs. divided by 100)		
E:	**Monthly Missed Bonus $:**	(C x D) =	**TOTAL $:**

2) Milk Production Losses Due to Subclinical Mastitis

Lactation Group	Avg. Linear Score (see chart below)	Suggested Linear Score Goal	Linear Score Difference (A-B)	Multiply by Estimated Milk Loss/Unit LS	Multiply by Number of Cows	Lbs. of Milk Lost Per Group (C x D x E)
Lact. 1	A:	B: 2	C:	D: x 200 lbs.	E: x	F:
Lact. 2+	A:	B: 2.5	C:	D: x 400 lbs.	E: x	F:

G:	**Total Lbs. of Milk Lost Due to Subclinical Mastitis**	F + F =	**TOTAL LBS. :**
H:	Milk Price per lb. (divide hundredweight price by 100)		
I:	Total Milk Loss $	G x H =	
J:	**Monthly Milk Production $ Losses Due to Subclinical Mastitis**	I ÷ 12 =	**TOTAL $:**

Relationship Between SCC, Linear Scores, and Milk Yield Loss

SCC Range	Linear Score	Milk Loss - Lact. 1	Milk Loss - Lact. 2+
18,000 - 34,000	1	0 lb.	0 lb.
35,000 - 68,000	2	0 lb.	0 lb.
69,000 - 136,000	3	200 lb.	400 lb.
137,000 - 273,000	4	400 lb.	800 lb.
274,000 - 546,000	5	600 lb.	1,200 lb.
547,000 - 1,092,000	6	800 lb.	1,600 lb.
1,093,000 - 2,185,000	7	1,000 lb.	2,000 lb.

P. Ruegg, University of Wisconsin, 2005

3) Clinical Mastitis Costs (Input values may be rough estimates - if you don't have an estimate, try to use the example number provided)

A:	Average Cost of Drugs Used Per 1 Clinical Mastitis Case (include all drug costs):		Example: $18.00	
B:	Average Number of Days Milk is Discarded		Example: 6 days	
C:	Average Production/Cow/Day Discarded in Lbs.		Example: 65 lbs.	
D:	Milk Price per lb. (divide hundredweight price by 100)		Example: $0.15	
E:	Total Cost of Discarded Milk	B x C x D =		
F:	Estimated Labor and Vet Costs/Clinical Case		Example: $20.00	
G:	Total Cost per Clinical Case of Mastitis	A + E + F =		
H:	Estimated Number of Clinical Cases Treated per Month			
I:	**Monthly Cost of Clinical Mastitis**	G x H =		**TOTAL $:**

Imagine if these losses were gains you could add directly to your bottom line!

Total Yearly Loss

Total 1):	+	Total 2):	+	Total 3):	=	x 12 =	**TOTAL YEARLY LOSS:**

Worksheet References: Premiums, Production and Pails of Discarded Milk, How Much Money Does Mastitis Cost You?, Pamela Ruegg, DVM, MPVM, University of Wisconsin-Madison, Milk Money Program, 2005; Measuring Milk Quality Losses Using a Modified Goal Form, Nigel Cook, MRCVS and Ken Nordlund, DVM, University of Wisconsin-Madison School of Veterinary Medicine.

GEA Farm Technologies

GEA WestfaliaSurge, Inc.
1880 Country Farm Drive, Naperville, IL 60563
Toll Free: 1.877.WS.DAIRY
www.gea-farmtechnologies.com

GEA WestfaliaSurge Canada Co.
8-60 Bristol Rd. E., Suite #519 Mississauga, ON L4Z 3K8
Toll Free: 1.877.WS.DAIRY
www.gea-farmtechnologies.com

GEA Farm Services
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