



The Milk Lines



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Fan Cash

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Observations on local dairies with fans for cow cooling over the past couple of summers can now be coupled with cash incentive programs from utility companies. Comparisons showed the high volume, low speed (HVLS), 20 ft. ceiling fans have given equal barn cooling and cow performance response to the traditional low volume, high speed (LVHS), 36-inch wall mounted fans. This was both in milking barn wash/holding pens and free stall barns. However, this similar milk production was done with 85% less electricity when using the HVLS fans rather than the LVHS model.

One HVLS fan does cost more than the LVHS model initially but on an air movement basis. One HVLS will give the results of six LVHS fans. This, plus the 85% energy saving, makes it an attractive cow cooling option. The “energy bonus” incentive from the utility company additionally makes consideration of the HVLS fan something to think about for both new barns, as well as retrofits. There are circumstances where the traditional LVHS fan still can be the best option, such as limited physical mounting space.

A one summer observation with a 5 ft. ceiling fan was compared to the LVHS fan in a 1:1 ratio. It offers another option for electrical savings in situations where the larger HVLS may not fit, but energy savings are

needed. Results are promising; however, additional observations are needed to confirm cow responses that were seen. Table 1 shows an abbreviated cost analysis of the fan comparisons for milk barn and free stall setups. Values were based on average prices and energy costs as of 9/23/01. Current detailed costs can be obtained from related sales and utility companies.

Table 1. Comparative Dairy Fan Option Install Cost and Electrical Saving Estimations.*

Experiment #1	Milking Barn 200 Cow Wash & Holding Pen	
Fan Type & Model	3 ft. LVHS	20 ft. HVLS
Power Demand, kW/fan	0.538	0.440
Fan Run, hrs./yr.	4,000	4,000
Fan Air Volume Ratio	12	2
Fan & Install Costs, \$/fan	700	5,325
Energy Cost/Yr. @.10\$/kwh	2,582	352
Power Demand Costs, \$/yr.	307	42
Experiment #2	1,000 Cow Free Stall Barn	
Fan Type & Model	3 ft. LVHS	20 ft. HVLS
Power Demand, kW/fan	0.538	0.440
Fan Run, hrs./yr.	2,000	2,000
Fan Air Volume Ratio	100	17
Fan & Install Costs, \$/fan	700	5,325
Energy Cost/Yr. @.10\$/kwh	10,760	1,496
Power Demand Costs, \$/yr.	2,560	356
Experiment #3	1,000 Cow Free Stall Barn	
Fan Type & Model	3 ft. LVHS	5 ft. ceiling
Power Demand, kW/fan	0.538	0.090
Fan Run, hrs./yr.	2,000	2,000
Fan Air Volume Ratio	100	100
Fan & Install Costs, \$/fan	700	330
Energy Cost/Yr. @.10\$/kwh	10,760	1,800
Power Demand Costs, \$/yr.	2,560	428

*Values based on observed usages at time of experiments and costs as of 9/23/01.

Table 1 shows for the wash/holding pens an extra \$2,250 initial cost for the 2 HVLS fans than the 12 LVHS fans. However, the electric and power demand savings with the HVLS fans would pay the difference in less than one year. The figures show that 100 LVHS fans for the 1,000 cow free stall barn would cost \$70,000 and the 17 HVLS fans will cost \$90,525. The \$20,525 difference would be eliminated in less than 3 years by the quoted energy and power demand savings. The utility incentives will further reduce these payback times. Experiment #3 limited observations show the 5 ft. ceiling fans have both less initial and operational costs than the LVHS fans.

Utility company incentive programs are for both retrofit and new construction projects. Details of these can be obtained from Southern California Edison by calling 1-800-634-9175 or 559-685-3702 or www.scespc.com (for retrofit projects) also www.savingsbydesign.com for new construction. For PG&E go to www.pge.com, then select SAVE ENERGY & MONEY, then BUSINESS, then REBATE PROGRAMS, then see NEW CONSTRUCTION PROGRAMS and STANDARD PERFORMANCE lines. These are new programs started 4/4/02 under the California Public Utilities Commission.

Questions about the dairy fan experiments can be directed to the farm advisor office or details can be seen at cetulare.ucdavis.edu, then click advisor Tom Shultz and select Electric Power Saving Fan Options for Cow Cooling.

Acknowledgments for completing these projects include Paul Williams, Southern California Edison; Jim Thompson, Bio. & Ag. Engineering Dept., UC Davis; California Energy Commission; and special thanks to the Tulare dairies Riverbend, McMoo and Nunes Brothers for use of facilities and animals. For HVLS fan information contact 1-877-244-3267 or www.hvls.com, and for the 5 ft. ceiling fans contact 1-920-235-7808 or www.envirofan.com.

Is Your Mastitis Treatment Working?

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Mastitis continues to be a fact of life on dairies and because of these infections, cows are being treated in hopes of curing the infections. How can you decide if your mastitis treatment is really working or not? Well, most of the time we feel that the treatment was successful if the milk looks normal in appearance within a few milkings after the treatment. The purist would call that a "clinical cure." Many folks would prefer a bacteriological cure where the milk not only returns to normal appearance but the causative bacteria is removed from the quarter. Here are some ideas to consider when you want to decide about cures.

Clinical Cures. A clinical cure results when the cow is treated for mastitis, the milk returns to normal or near normal appearance and the milkers put the milk in the tank. If fact, this cow may not be cured and the infection may remain inactive only to flare up again in the near future.

Mastitis Records. On dairies that culture all clinical cases and keep records of mastitis treatments by quarters, one might suspect that there was a true bacteriological cure when no additional cases occur in that quarter within 4 to 6 weeks. Cows with repeated cases with the same bacteria and treatments in the same quarter are probably not cured. Accurate records are necessary to decide when the treatments are successful based solely on clinical cures.

Somatic Cell Counts. On dairies using DHI or some other cell counting management tool, the somatic cell counts give a good indication when a true bacteriological cure has occurred. After treatment, the somatic cell count for the quarter should drop below 300,000 cells/ml if the bacteria have been destroyed. It may take 3 to 4 weeks for the count to drop back to the normal, noninfected range. When the counts remain

consistently above 500,000 cells/ml even though the milk may look normal, the infection remains. The CMT paddle test can also be used to check an individual quarter. Any CMT reaction greater than a trace indicates a persisting infection. Remember that the SCC or CMT takes 3 to 4 weeks to fall, so don't be too anxious and test the quarter too soon.

Milk Culture. Quarters can be re-cultured following treatment to check for a bacteriological cure. It is probably best to wait at least 10 to 14 days after the last treatment before taking the milk sample for re-culture. If a true bacteriological cure has taken place, the mastitis pathogen found on the initial culture should not be found on the follow-up sample.

These strategies can be used together to increase your confidence in knowing that a cure has taken place. First, there should be improvement in the character of the milk. On the next SCC test, the SCC should be reduced and a milk culture should reveal no bacterial growth. All three of these in tandem strongly suggest that the treatment has been successful. A check of the health record for the cow at the end of her lactation would be expected to show no further cases of mastitis in the treated quarter.

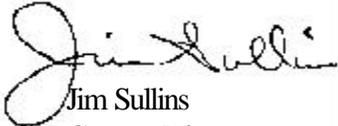
It is a good management practice to continually check

to see that the mastitis treatments being used on a dairy are working successfully. Routine uses of these strategies can prevent chronic infections, loss of quarters and deteriorating milk quality.

Culturing for *Staph aureus*

John Kirk, DVM, MPVM

Have you ever wanted to take a milk sample from a particular cow for milk culture and had the milker get the milking machine on the cow before you got the milk sample? A recent paper in the *Canadian Veterinary Journal* suggests that if you are sampling for *Staph aureus*, all is not lost. They took milk samples from 55 cows with subclinical infection with *Staph aureus*. They sampled both before and after the cows were milked. Each of the samples was divided in half. Half of the samples were cultured from fresh milk, and the other half was frozen prior to culture. There was no difference in their ability to detect *Staph aureus* in premilking samples whether fresh or frozen or postmilking samples that were frozen. Fresh postmilking samples, however, were inferior to the other samples. As most dairies are freezing their mastitis milk samples prior to submission as batches, the ability to detect *Staph aureus* will be equally effective when sampling before or after milking.



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