

RELATIONSHIP OF COW HYGIENE SCORES AND SCC

Jeffrey K. Reneau, Anthony J. Seykora, Bradley J. Heins,
Russell F. Bey and Ralph J. Farnsworth
University of Minnesota, St. Paul

Introduction

The use of subjective measures has proven to be an effective means of assessing animal health and herd management. Body condition scoring, lameness scoring, and teat condition scoring are examples of successful use of subjective scoring systems on dairy farms. Cow hygiene scoring is a subjective method of accessing cow hygiene. A study in the Netherlands showed that herds with BTSCC less than 150,000 had 4 times fewer dry cows with >30% of their udders cover with manure (1). Although it is logical to expect that cleaner cows would have fewer environmental mastitis infections than dirty cows this association has not been documented. In addition, since the degree of hygiene is subjective, what appears dirty to one individual may appear “normal” to another. Therefore the discussion of what is clean is often driven by opinion rather than fact. More stringent food quality and safety expectations by the consuming public will require dairies in the future to further safeguard food quality and safety by improving general cow hygiene. The objective of this study was to investigate if there was any correlation between cow hygiene scoring and individual cow SCC.

Materials and Methods

A scoring system scale from 1 to 5 was selected. Score 1 indicates cow that is absolutely clean while a score 5 indicates a very dirty cow. Five scale-scoring schemes are common in the dairy industry and are easily understood. The 1-5 scale is easily broken down into half or quarter point increments depending on the skill and experience of the scorer thus providing sufficient resolution to enable relatively repeatable categorical objectivity for subjective observations. A scorecard was devised by modifying the cleanliness scorecard developed by Chiappini et al (2). This scorecard uses simple drawings to illustrate the degree of cow hygiene to reduce the need for cumbersome written descriptions. This scorecard is similar to the body condition scorecard developed and validated by Edmonson et al (3). The cow hygiene scorecard was broken down into five general areas: Tail head, Flank, Belly, Udder, and Rear legs and feet. Nine herds were selected for the trial (8 free stall, 1 tie stall). All herds were deemed to have predominantly environmental mastitis problems as indicated by bulk tank cultures. Individual cow SCC and culture data was used to edit known contagious mastitis pathogen infected cows from the data. A total of 1093 cows in the 9 herds were hygiene scored within 2 days of DHI test day. Each cow was scored in each of the five body areas. An udder-leg composition score was created, by averaging the udder and rear legs scores. A regression model was used to determine the effect that hygiene score had on SCS: $SCS = \text{Herd} + \text{Parity} + \text{DIM} + \text{DIM}^2 + \text{“Hygiene score”}$; where SCS is the linear somatic cell count on DHIA test day,

there were four parity groups (1, 2, 3, and 4 or greater), and DIM is the days in milk on DHIA test day. The model was run separately for each hygiene score trait.

Results and Discussion

The mean SCC, SCS, FCM, DIM, and 305ME for the 1093 cows in the study were 405,242 (SD 1,017,000), 3.35 (SD 1.98), 80.91 lbs (SD29.2), 207 days (SD 139.59), and 24,321 lbs (SD 5022) respectively. Herd, Parity, DIM and DIM² were all significant effects in the model (P < .01). Of the hygiene score traits Tail head, Flank and Belly were not significant. However, as Udder, Rear legs, and Udder – Rear legs composition scores increased SCS also increased. For each 1 standard deviation increase in Udder, Rear legs or Udder – Rear legs composition score, SCS increased by 0.13, 0.17 and 0.17, respectively.

Table 1. Relationship of cow hygiene score and SCS

	Mean Hygiene Score	Standard deviation	Regression Coefficients	P - Values
Tail head	2.43	0.74	-0.02	0.82
Flank	2.54	0.92	0.05	0.40
Belly	2.31	0.76	0.08	0.33
Udder	2.64	0.84	0.15	0.03
Rear legs / feet	3.21	0.76	0.22	< 0.01
Udder + legs composite	2.92	0.67	0.25	< 0.01

Conclusion

In these herds only hygiene scores of udder and lower rear legs significantly affected SCS. Similar herds with predominance of environmental mastitis infections and similar somatic cell count levels may expect to see a 40-50,000 change in herd SCC for each 1-unit change in cow hygiene scores.

References

1. Barkema, H. W., Y. H. Schukken, T. J. G. M. Lam, M. L. Beiboer, G. Benedictus, and A. Brand. 1998. Management practices associated with low, medium, and high somatic cell counts in bulk milk. *J. Dairy Sci.* 81:1917-1927.
2. Chiappini, U., P. Zappavigna, P. Rossi, and P. Ferrari. 1994. Proc. 3^d Internatl. Dairy Housing Conf. 2-4 February 1994, Orlando, FL.
3. Edmonson, A. J., I. J. Lean, L. D. Weaver, T. Farver, and G. Webster. 1989. A body-scoring chart for Holstein cows. *J. Dairy Sci.* 72: 68-78.