

Friday, August 31, 2012

Analyze records and learn

A case study shows how somatic cell count has multiple causes

Edition: Final

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Column: Vet's Corner

Section: News **Page:** 64

GARY'S MOVE INTO HIS new parlour went seamlessly. The cows transitioned well during the construction period, at which time the holding area was under constant change while the parlor was operational.

Somatic cell count (SCC) in May and June 2012 dropped below 100,000 on some daily pick-ups (figure 1). At first glance the DFO graph would suggest that the new parlour was the answer to this herd with historically elevated SCC issues. Even Gary would suggest that the sole change was the parlour.

Let's review: over the past two years, Gary and I discussed his mounting SCC problem and the imminent lowering of the DFO-SCC penalty level to 400,000. We discussed treatment protocols, milking procedures and analyzed DHI results after each test.

I considered Gary to be a very reluctant user of mastitis infusion tubes, instead, therapy included repeated applications of an udder rub. I have concerns with this type of treatment, since mastitis, without culturing for the causative bacteria, and without aggressive antibiotic therapy when required, can result in visual cure without bacterial cure. This often leads to a return to clinical mastitis in the future and a herd with a high number of chronic mastitis cases and SCC problems.

This herd was a prime example, as can be seen in figure 2 -line 4. The data for this chart is taken from Gary's Canwest DHI reports. A reasonable goal for the number of cows with chronic SCC infections is 5-10 per cent.

The old parlour was an eight stall flat parlour. One person milked and prepared two cows at a time. Prep-lag time was short and the automatic takeoffs were not consistent due to their age. Further adjustment by the equipment dealer to attain uniform end of milking removal was impossible.

Lactocorder analysis showed bimodal milk flow, due to fast cow preparation. Bimodal milk flow occurs at the beginning of milking when cows are poorly prepped, leading to poor oxytocin release and then poor milk letdown. The new parlour couldn't come soon enough!

Parlour construction began in late summer 2011 and to look at the DFO graph, you would think that the cows could sense a new parlour was in the works and began to self-cure their SCC issues.

In fact, two people began working in the existing parlour to provide better cow preparation and ensure that the units were consistently removed at the correct time, prior to low milk flow. The new parlour was operational in late December yet holding pen construction continued until February. In the new parlour, cow preparation protocols were implemented to provide proper prep-lag time for each cow: 60 to 120 seconds. A great review of milking preparation has recently been sent to all Ontario producers titled "Step-by- Step Milking Procedures and Best Milking Practices".

This herd had always attained reasonable SCC levels in first lactation (figure 2). The SCC increase essentially started in lactation 2 and by the end of lactation 3 the counts were too high. SCCs in the fresh cows had always been good. On average 85-90 per cent of cows had low counts on first test after the dry period (figure 2-line 6). Infections beginning in the dry period were not a significant issue.

Looking at figure 2, you can see significant changes in chronic infections - a high of 21 per cent in October 2011 to three per cent in May and July, 2012. A big drop occurred after October and then again after February 2012.

New infections went from a high of 21 per cent in September 2011 to four per cent and eight per cent in May and July. New infections during lactation are typically from two sources: 1) environment of the cow 2) milking procedures and equipment. Cow environment did not change, the stalls were always kept in good condition - clean and dry.

There were certainly significant improvements in the latter. This change was most noticeable after February 2012, likely due to delayed new parlour effects. In figure 2, you will see very little change in SCC in first and second lactation cows through 2012 but a significant change occurred in third lactation animals. This group improved from SCCs of greater than 1 million in December 2011 to 98,000, 65,000 and 68,000 in February, May and July 2012 respectively.

Note that the number of mature cows dropped from 29 in June 2011 to 12 in July 2012. As much as there were parlour effects in this herd, it was culling which made the most significant difference.

In July and August 2011, there were 10 cows sold with an average maximum SCC of 850,000 during their lactation. From November 2011 to January 2012, 25 cows were sold with an average maximum SCC of 3 million. Of the 35 cows culled, only three were declared culled for SCC issues. The 3 reasons at the top of the list were: reproduction, feet and legs and low production. This substantial cull was possible due to a large number of heifers calving and a few purchases.

At the beginning of this article I wrote that Gary believed that the parlour was the sole reason for his herd's SCC improvement. The parlour proved to be secondary but very necessary to keep new infection rates low. The biggest factor on this farm was culling chronically infected cows albeit for other reasons as previously mentioned. Gary could hardly believe what the data showed us.

There are instances, and this is one, where the number of chronically infected cows are so great that no matter what changes are implemented to reduce SCC, the only solution is to cull cows. I don't believe trying to implement treatment protocols to reduce the infection level would have been successful on this farm at this time. Once we removed cows and were able to implement excellent new milking parlour protocols we saw the results seen in figures 1 and 2.

This is a great case to show how records can be used to identify problems and in the end demonstrate cause and effect.

Memo: Ontario Dairy Farmer August/September 2012