

DAIRY VETERINARY NEWSLETTER

December 2013

“Top Stories” in Dairy During the Year 2013 - Some Old and Some New

It is interesting sometimes to see some information about the most frequently asked questions, most viewed articles, etc. in many contexts or professions, including within the dairy industry (at least the latter is probably interesting to us that are in the dairy industry). Karen Lee in Progressive Dairyman, Dec. 11, 2013 wrote about “The stories that were” in the dairy industry this year. First, this gave me the idea to do an internet search on “Dairy” and “Dairy veterinarian”.

The top stories on the “Dairy” search page included some about the latest dairy cow abuse video that just came out from a farm in Wisconsin, but most of the top stories were about dairy food, and mostly positive. It continues to be true that besides milk, cheese, pizza, ice cream, yogurt (especially if it is called “Greek” this past year), whipped cream, cookies, and other foods using milk are quite popular. As we have noted in this newsletter before, eating food on a daily basis is important among people’s priorities, and the unfortunate truth is that too many people in the world can’t get enough food, including dairy and beef as well as other kinds of food. This is also a good reminder that we take care of dairy animals, work with their owners, and keep up on prevention and treatment of dairy animal disease so that the mammary secretions of dairy cows, goats, sheep, horses (dairy mare milk is very pricey) can be a vital and healthy food as well as comprising the main thing many people think about when they think of “dairy”.

Top stories on the “Dairy veterinarian” search page were mostly about how to find a dairy vet near you. However, the first page also included some coverage of the recent dairy cow abuse video. There was not much about dairy vet work, vet school admission, or animal disease; information for several pages down was mainly about how to find a vet. This is probably a good sign that dairy veterinarians continue to be largely seen favorably. There was also a YouTube video featuring Dr. Justin Roberts on page 3 of the search.

Back to Lee’s article, the top stories of 2013 shown there were:

National Conference on Interstate Milk Shipments did not change the SCC 750,000/ml legal limit for raw milk

That story has been unchanged for 20 years. However, many dairy producers are now told by their milk buying company that with European Union Export Certificate standards, milk cannot have an SCC > 400,000/ml (this is not strictly true; derogations can be and are routinely obtained if necessary) but the milk buyers do not desire milk with SCC > 250,000/ml (this does seem to be quite consistent). The mean and

median SCC in the U.S. continues to trend downward (prevalence of mastitis is not changing much, but our genetic selection for cows with lower SCC has been marked.)

Whether or not to allow aspartame sweetened milk to be labeled as “milk”

I must admit this one surprised me and I had not heard much about it recently. This may have to do with the fact that it seems the FDA is in no hurry to make a decision despite the fact that a petition regarding this decision was filed in 2009. (The news story was because the FDA published the 4-year old petition for the first time.)

Corn price falls

Almost anyone involved in feeding dairy herds or making conversation with dairy producers has probably heard or will be hearing about this. Corn price per bushel during 2013 was often between \$7.37 and \$8.49 but recent futures prices are approximately \$5.50. The article addresses this in some detail, including touching on the expected government decision to reduce the amount of corn that must go into ethanol production. If as expected, corn continues to be cheaper next year, dairy farm profitability (and feeding of corn to dairy cattle) is predicted to increase.

Farm bill/immigration reform continue to stall in Congress

Many different quarters have predicted various forms of catastrophe with no farm bill or immigration reform legislation for more than a year, particularly immigration legislation aimed at agricultural labor, but these disasters, at least as advertised, do not seem to have taken place unless I missed something big. However, the current speculation centers on reversion to the 1949 milk pricing system (this speculation was also present a year ago, but a temporary extension of then-current policy intervened), with many speculating that “milk prices could double within a month after January 1, 2014”. I know that this upsets dairy producers, because they feel that they are misrepresented to the public regarding profitability.

U.S. Agriculture Secretary Tom Vilsack has commented regarding the reversion to the 1949 price formula, “- - [dairy producers] would have a choice of selling [milk] to [their] normal purchaser at \$18 or \$19 a hundred weight or to USDA at \$38 a hundred weight. What do you think producers will do?” Jim Dunn, professor of agricultural economics at Penn State University, says that if producers sold to the government, it “would be terrible. Every refrigerated warehouse in the United States would be full of cheese and butter, and nonrefrigerated milk warehouses would be full of powdered milk.”

I find this difficult to imagine, but I also remember when I could not believe the Berlin Wall would ever come down or the USSR would collapse. Imagine the tremendous buildup of cow numbers and the resultant glut of milk that would result if we had \$38.00/cwt milk for very long.

Viruses as a Cause of High SCC in Cows?

As summarized in the November 2013 AABP newsletter, an interesting paper by Herleker et al. appeared in J Dairy Sci, 2013. I will summarize more of the paper here. Among the subjects investigated in their study were bovine herpesvirus (BHV)1, BHV2, BHV4 and BVD in milk. The authors point out that of cows defined as having mastitis by SCC > 200,000 or > 300,000/ml, approximately 20% to 35% have negative results when their milk is cultured for bacteria. There has been previous speculation that BHV1, BHV2 or BHV4 could contribute to the development of mastitis, including by causing vesicular teat lesions and/or immunosuppression in infected cows.

From a Pennsylvania dairy herd, 1479 lactating cows had DHIA Linear Scores of the SCC for 3 consecutive monthly tests. Using a random number generator to pick cows' ID's (it was not clear if cows were stratified by lactation number before randomly being chosen; it seems that first lactation cows may have been underrepresented, but they have less mastitis per cow-day anyway), 139 cows between 90 and 120 DIM were chosen for study. Aseptically collected milk samples were obtained premilking on days 1, 3 and 5 of the study. Milk samples were tested for SCC, and bacterial culture was begun, both on the day of collection. The DeLaval SCC counter was used for SCC measurement, and culture was done using quad plates with Edwards modified medium, MacConkey's agar, Baird-Parker agar, and 5% sheep blood agar. Plates were incubated for 48 hr at 37° C and if needed, API 20 Strep, API Staph, API 20E or API 20NE test kits were used or final identification of bacteria. Accepted special media and methods for *Mycoplasma* spp. detection were also used, but final results did not include any mycoplasma isolates.

DNA extraction used Qiagen test kits. Primers for real-time PCR detection of the BHV viruses were designed (methods are covered in detail in the paper), and those for BVD detection were from the Animal Diagnostic Laboratory at Penn State. Reference strains for all 4 viruses were used as positive controls. A SYBR Green dye based real-time PCR was developed to detect BHV1, BHV2, BHV4 and BVD in the cellular fraction of the milk. The cycle threshold (Ct) was < 35 cycles to detect fluorescence above background and the melting temperature (Tm) was specific for each type of virus.

A cow was considered positive for presence of BHV or BVDV in milk if test results were positive on at least 1 of the 3 composite quarter milk samples. No BVD was detected in any milk samples. Milk samples from 18.0%, 38.1%, and 2.9% of cows were positive for BHV1, BHV2, and BHV4, respectively. There were 72 cows with one or more of BHV1, BHV2, or BHV4 virus detected in only 1/3 milk samples; 8 cows had virus found in 2/3 milk samples, and only 2 cows (one with BHV2, one with BHV4) were positive in all 3 milk samples. (See Table 3 below.) I am virtually certain that the above means that *any one* of the 3 samples was positive most commonly, and *any two* of the 3 samples were positive in 8 cows, but there is a sentence in the paper saying, "The frequency of detection of BHV1, BHV2, and BHV4 was the highest on d 1 compared with d 3 and 5 (Table 3)." I think someone misinterpreted this and no one else noticed. I have never seen shedding patterns in milk such that on the first day of the study of a *naturally occurring* disease, it is shed a lot, and then two days later it is not, etc. This just shows that viral shedding/detection in bovine milk is inconsistent, which has been observed previously.

Table 3. Frequency of detection of bovine herpesvirus (BHV) 1, 2, and 4 in by real-time PCR assay from 3 composite quarter milk samples from 139 lactating cows. (From Herleker et al., J Dairy Sci, 2013)

Frequency of positive test (positive /total)	<u>Total no. (%)</u>		
	<u>BHV1</u>	<u>BHV2</u>	<u>BHV4</u>
1/3	24 (17.2)	46 (33.0)	2 (1.4)
2/3	1 (0.7)	6 (4.3)	1 (0.7)
3/3	0	1 (0.7)	1 (0.7)

The authors did a nice job in both tables and text of investigating the relationships between BHV viruses, bacterial mastitis pathogens isolated concurrently, and SCC in the composite milk. BHV+/Bact- milk SCC mean was 95,000/ml, and BHV-/Bact- milk SCC mean was 55,000/ml, not significantly different. In contrast, mean SCC was 448,000/ml in BHV+/Bact+ milk and 445,000/ml in BHV-/Bact+ milk; these were

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not significantly different from each other, but both bacteria-positive samples' SCC were significantly higher than for the bacteria-negative samples, whether any BHV virus was detected or not.

Most common bacterial isolates were coagulase-negative staphylococci (CNS) 87 (63%), *Aerococcus viridans* 63 (45%), *Staphylococcus aureus* 23 (17%), and *Streptococcus uberis* 18 (13%). There was no association between isolation of a mastitis pathogen and whether milk was positive or negative concurrently with a BHV virus. The authors concluded, "The findings of our study suggest that, in the herd we examined, BHV1, BHV2, and BHV4 are probably not major udder pathogens. The major influence on milk SCC was bacterial IMI, suggesting that the tested viral etiologies have little influence on mastitis."

I hope our readers all have a great holiday season.

Please let us know your comments and also suggestions for future topics. I can be reached at (435) 760-3731 (Cell), (435) 797-1899 M-Tues, (435) 797-7120 W-F or David.Wilson@usu.edu.



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