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Bovine Somatotropin and the Mastitis Challenge

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Through an unprecedented number of studies conducted worldwide, the use of recombinant bovine somatotropin (bst) has been shown to increase milk

Production from cows that is safe for humans and animals. As regulators approve the use of bst, we will have to adjust our feeding and management practices in order to maximize its effectiveness. We will also have to consider the effect of bst on mastitis.

Recent reviews of bovine somatotropin in the dairy industry (1) indicated cows administered bst are physiologically and metabolically like cows producing milk at similar levels. Therefore, they must be treated appropriately for their higher production levels.

Dairy cows today produce about twice as much milk as the average twenty years ago (2). Genetic improvement, better feeding practices and improved health care has allowed this increase. It has come without the use of any performance enhancing substances.

Now bst is on the horizon with the potential to increase production by up to 25%, although average increase will undoubtedly be well below this figure. With this surge in production, adjustments will have to be made to feed nutrients, breeding practices and cow management. This will result in increased use of total mixed rations to optimize dry matter intake, and will include the feeding of mastitis reducing nutrients. Cow comfort will be emphasized and milking practices will improve to minimize the occurrence of mastitis infections.

It should be the goal of every dairyman to produce milk and Dairy products that taste good and are wholesome. This can only be achieved through the production of milk with somatic cell counts as low as possible. The negative effect of somatic cell count (sec) on milk yield is well documented. Each doubling of sec in milk decreases yield by 91 kg. (200 lbs.) Per lactation for first lactation heifers. In older cows, this effect is doubled to about 180 kg (400 lbs.) Per lactation (3).

Milk quality is also adversely affected when sec rises. Milk with high sec is associated with (3):

1. A salty, less sweet and sometimes slightly rancid taste.
2. A shortened shelf life.
3. Decreased cheese yield.
4. Increased rennet clotting time and a slower rate of curd formation.
5. Fat and protein losses in whey.
6. Increased moisture and defect frequency in cheddar cheese.
7. Weak body and poor culture activity in yogurt.
8. Reduced textural acceptability and softening of non-aged cheeses; sometimes accompanied by off-flavors.

To avoid the problems associated with high SCC milk we must first be aware of the presence and concentration of somatic cells. The Wisconsin Mastitis Test (WMT) provides an accurate, versatile and inexpensive method of SCC detection. The WMT can be a powerful tool in improving the quality of milk produced. It can also protect the dairy herd and the milk producer from the losses associated with mastitis in high producing cows

As milk production rises in cows treated with bst, there is more stress placed on the mammary tissue. This increases the risk of mastitis infections. Unless managed carefully, mastitis can wipe out much of the benefit of higher milk production through bst treatment. Therefore, all dairymen to maintain high milk quality and production should incorporate good milking management and a preventative mastitis program.

1. Gary F. Hartnell, PAS, "Bovine Somatotropin in the Dairy Industry". The Professional Animal Scientist, vol. 10 no. 3, Sept. 1994.
2. Statistics Canada Report 1994.
3. C.G.Schwab, A.J. Young, N.L. Whitehouse and M.T. Socha, "Feeding and Milk Quality". Feed Mix, vol. 1, No. 2, 1993.