



Direct Fed Microbials for the Millennium and Beyond ...

Direct Fed Microbials and rBST Use

William A. Zimmer D.V.M.

Recent events have left dairymen who have embraced rBST use on their cows in a quandary. With rBST quotas reduced by 50% and rBST prices increasing by 9%, some dairymen must cope with maintaining milk flow, cash flow and a lower return on their rBST investment.

One technology that offers improved milk flow and cash flow is feeding a direct fed microbial. Numerous trials have shown the benefits of Generator™ DFMs for milk production. However, little is known about the interaction between DFM technology and technologies such as rBST. What we do know leads us to believe that these technologies are working independently of each other and therefore should provide nearly additive results when implemented together.

In this article, we will discuss the possibilities of these technologies.

Published responses to rBST in controlled studies range from about 8 to 12 pounds of additional milk per cow per day. Using the newly announced rBST price, February 2004 Class III milk price (\$11.89/cwt) and figuring labor costs associated with rBST at 25 cents per injection, the expected return on investment for an average of 10 pounds more milk from using rBST at the recommended 14 day cycles would be \$2.64 for each dollar invested.

Most trials involving DFMs show a typical response of 2 to 4 pounds of additional milk per cow per day. Bio-Vet trials using Generator™ Direct Fed Microbial formulations show an average milk increase of a little over 3 pounds per cow per day. Using Bio-Vet's premiere DFM (Generator™ ELITE) priced at 7 to 14 cents per cow per day and the February 2004 Class III milk price, the average expected return on investment from feeding Generator™ ELITE daily would be about \$2.52 to \$5.04 for each dollar invested.

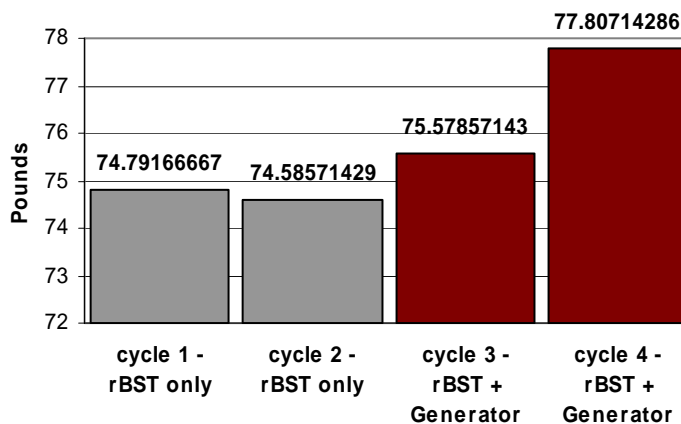
As you can see, the return on investment for both of these technologies is similar. The difference is that rBST typically yields more milk than might be possible from a DFM, albeit it at a substantially higher initial investment cost. The dairyman's biggest challenge of using a DFM is sorting through the numerous products to find the one that best fits his or her situation. DFMs vary dramatically in quality, microbial technology and capability, and price. Innovative technology, research and a reputation for quality and performance are important considerations when selecting a DFM company or product. Dairymen should ask questions to make sure they are getting the best return on their investment dollar.

What about using these technologies together?

Figure 1 shows the results of an on-off trial using Generator™ DFM simultaneously with rBST. This 500-cow dairy trial included multiple, 14-day rBST cycles. As you can see, feeding Generator™ DFM while using rBST yielded up to three pounds more milk than using rBST alone.

It is important to understand that rBST and DFMs typically have different response times. Milk production usually increases a few days after an rBST injection, peaks over a few more days and then begins to decline until it reaches the baseline by about day 13 or 14. Milk response time to DFMs is quite variable, ranging from a couple of days

Figure 1
Average Daily Milk Production during 14 day rBST Cycles with or without Generator DFM



to a few weeks. That is, increases in milk may not be noticeable until two or three weeks after beginning to feed some DFMs. Likewise, milk production may not be noticeably lower until two or three weeks after ceasing to feed some DFMs. This may be due to the complex populations of rumen organisms, and how long they take to change.

Not shown in figure 1 is the fact that in the 'off' period following cycle 4, milk production for cows receiving only rBST decreased such that 17 days later production was about the same as during cycles 1 and 2, and was trending downward. This data is not shown because two full rBST cycles were not completed before the end of the feeding trial. This herd is an excellent example of the delay in milk production changes from either feeding or not feeding a DFM and the difference in response times between rBST and DFMs.

At a 180 cow dairy, the effects of Generator™ DFM on the last half of an rBST cycle were evaluated. Only a very short time period was viewed so results and conclusions are very limited.

This herd observed a daily milk swing (lowest to highest daily yield) from 82.1 to 83.8 pounds and averaged 83.04 pounds for the last 7 days of the rBST cycle prior to feeding Generator™ DFM, with a typical trend of milk production waning by about one pound during this period (see figure 2). Generator™ DFM was fed during the second

half of the next rBST cycle. Daily milk swing for the period when Generator™ DFM was fed ranged from 82.5 to 87.7 pounds and averaged 85.32 pounds. Milk production for this period trended upward by about 3 pounds (see figure 2). This upward trend is atypical of an rBST cycle and is attributable directly to the effects of Generator™ DFM. This herd showed a rapid response to Generator™ DFM.

This dairy also tracked daily feed intake and feed efficiency (pounds of milk produced per pound of dry matter consumed). Average dry matter intake for the rBST only and rBST + Generator™ DFM periods did not significantly differ (51.49 lbs. and 51.67 lbs. respectively). Feed efficiency for the rBST only and rBST + Generator™ DFM periods was 1.613 lbs. milk / lb. dry matter and 1.651 lbs. milk / lb. dry matter respectively (see figure 3). By the end of this feeding short feeding period, feed efficiency was over 7% better for cows fed Generator™ DFM. Other trials evaluating feed parameters have shown increased dry matter intake, feed efficiency or both.

It is important to understand that DFMs do not necessarily alter where the cow partitions ration nutrients. They only increase the supply of ration nutrients available to the cow. Other evaluations of herds using rBST show similar improvements in milk production or alternatively reproductive performance improvements, or both when feeding Generator™ DFMs. Body maintenance (condition) affects reproductive performance and animal health, two vital factors in determining the profitability of a dairy operation.

The bottom line is that while DFMs may not offer the magnitude of milk increase shown by rBST, they do offer an opportunity to increase milk production (and other factors that affect profitability) with a similar return on investment as rBST. The effects appear to be independent of rBST, which means DFMs should benefit both cows that are or are not receiving rBST. In a time when dairymen are looking to replace milk production and cash flow lost due to restricted supply of rBST, Generator™ DFM should be considered.

Figure 2

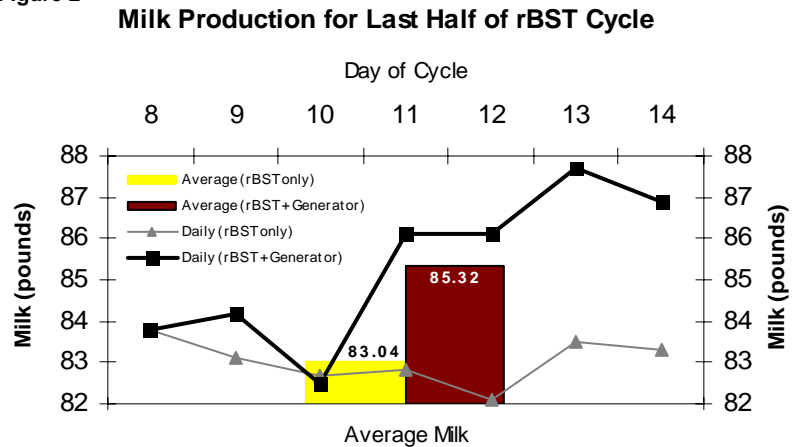
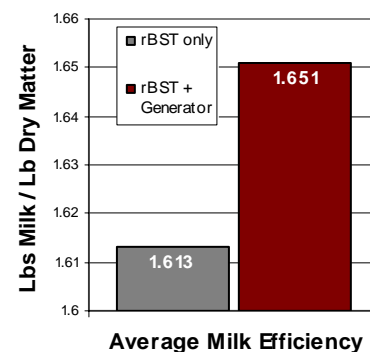


Figure 3

Milk Efficiency for rBST and Generator™ DFM



GeneratorwBSTarticle090104