Can Rolling Herd Averages Help You Manage Your Dairy Operation?

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This article looks at how Rolling Yearly Herd Averages for milk, fat and protein are calculated on DHI records processed through DRMS in Raleigh, NC and how they can and cannot be used to manage one's dairy herd.

Rolling herd averages represent how much milk, milk fat, and milk protein were produced by the average cow in a herd for the previous year. As such, these values reflect what has happened in the herd and not what current production is or future production will be. On the second page of the DHI-202 sheet, these values are listed for the current and previous test days for the past 365 days. The front page of the DHI-202 also lists the current test day rolling herd average.

Rolling Herd Averages for milk, fat and protein

Calculating the Rolling Herd Average for Milk

Rolling herd average for milk production represents the amount of milk produced for the year (365 days) for the average cow in the herd. This value represents production not only for the days the average cow was in milk, but also when she was dry. Cows which leave the herd also have their production data included in this value for the number of days they were in the herd over this yearly time period. For new herds on test, rolling herd averages are not calculated until the herd has completed 365 days on test.

To calculate a rolling herd average, the computer first calculates the test interval for each test day over the previous year. The test day interval is defined as the number of days from the day after the previous test day through (and including) the current test day. For example, from the test day of January 9th until the next test day on February 14th, the test day interval would be 36

days. The total cow-days per test interval are calculated next to reflect the total number of cows in the herd both milking and dry with each cow having one day counted for each day she is in the herd during the test interval. For cows which have left the herd, the number of cow-days they were in the herd for this test period is calculated and included in the calculation of total cow-days for this test period.

For each cow in the herd, her total milk production per test interval is calculated. For the first half of a test day interval, a cow's daily milk production is represented by the yield from the previous test day. The second half of the test day interval, daily milk production is represented by the yield recorded on the current test day. Thus, for the test day interval, her total milk production is the product of the previous test day yield (say, 60 pounds) times one-half the number of days in the test interval (18 for the example above) added to the product of the current test day yield (say, 70 pounds) multiplied by one half the number of days in the test interval (18 for the example above). This would give a total of 2340 pounds of milk [(18 days X 60 lbs milk) + (18 days X 70 lbs milk) = 2340 lbs milk for test period for one cow]. Total yearly production for the herd is calculated by adding the production for all cows in the herd over the test day intervals within the last 365 days. If the last test day interval results in more than 365 days of production data, the number of days is adjusted to 365 by removing the current days in the interval over 365.

Finally, to calculate the rolling herd average seen on the DHI-202 sheet, total yearly production for the herd is divided by the total yearly cow-days. This result is then multiplied by 365 to obtain the yearly rolling herd average for the average cow in the herd. The yearly rolling herd averages for fat and protein are calculated similarly to the rolling herd average for milk production.

Importance and Use of Rolling Herd Averages

Rolling herd averages for milk production, fat, and protein are not adjusted for age, stage of lactation, number of dry cows, or the length of the dry period. As such, long dry periods can decrease the rolling herd average since these cows are not contributing milk to the yearly average production during this time frame but are still having cow-days counted. In addition, a high percentage of first-calf heifers in the herd (assuming they have lower production than the mature cows) could reduce the rolling herd average.

The biggest limitation in using the values for rolling herd averages to manage your dairy operation is the fact that they represent the historical or previous effects of management practices. These values can be used to tell how well your dairy herd has done, but not how well your cows will milk in the future. To notice both positive and negative changes early, detecting subtle changes shortly after they occur and incorporating corrective (or continuing positive changes) management practices quickly is critical. To manage and evaluate what is happening currently in your dairy herd, standardized 150-day milk is a better measure of production changes in your herd. By making changes shortly after problems occur, problems can be corrected quickly with a minimal impact on production and profitability of the dairy herd.