by John Goeser

The next generation of farm benchmarking

WE SPENT some time talking about both next generation forage management solutions and dairy benchmarking during the 2024 Cornell PRO-Dairy Herd Health and Nutrition Conference. Cornell University has been a leader in dairy benchmarking efforts, facilitating herd benchmarking dating back 30 plus years and spanning across the U.S.

Roughly 15 years ago, I teamed up with Vita Plus' Stacy Nichols and other colleagues to facilitate benchmarking on a regional basis. Speaking from experience, peer group discussions that ensue following the benchmarking projects are incredibly valuable. We stand to learn so much from one another.

Income over feed varies

Nichols and his team's efforts continue to this day, having recently summarized data from roughly 100 dairies throughout the tristate region. He shared the recent project outcome, and in reviewing it, we broke out a subset of 20 high-output dairies to explore efficiency opportunities among farms shipping greater than 6.7 pounds combined fat and protein per cow per day.

The spread in feed conversion efficiency and income over feed cost within this subset is striking. Dry matter intake ranged from 53 to 65 pounds per cow per day, with these herds shipping between 6.7 and 7 pounds of solids. The energy-corrected milk based feed conversion efficiencies ranged from roughly 1.6 to 1.9.

Where the rubber hits the road is with income over feed costs (IOFC). The range in IOFC among these 20 high-output herds was roughly $3.50 per cow per day. The data also appeared normally distributed, meaning there were no outliers driving this massive IOFC range. The factors contributing to this continued sizable difference in economic performance, even for the highest output herds, will be a focal point for us in months to come.

Benchmarking efforts, such as this traditional herd performance and economic comparison project, are highly valuable to uncovering new opportunities for your herd. The point with this article is two-fold, with the next generation of dairy farm benchmarking getting off the ground. The next level to herd assessment and comparisons on top of that described above will center on carbon.

Calculating the carbon

I want to see that carbon continues to be a valuable asset for your dairy, one that can be marketed through insetting programs to offer your farm an additional revenue stream. Though carbon markets are quite complicated, carbon sequestered on a farm can't be directly measured like we do with pounds of milk in the bulk tank or on the truck. Instead, carbon needs to be calculated and modeled and then marketed through a contract or exchange. In the future, carbon may be measured to some extent, but for the time being, we rely upon modeling.

Learning from a few dairies I'm closely tied with, carbon footprint or life cycle assessment modeling is nothing new in agriculture. For example, greenhouse gases, regulated emissions, and energy use in technologies (GREET) modeling is a fairly well accepted approach within the energy industry. This was a new term for me to learn because GREET modeling has been associated with renewable natural gas projects (RNG) creating low carbon fuel.

Beyond RNG, there are three major carbon sources that we'll need to account for on dairies: in the fields, in the manure, and in the cow via enteric methane emissions. This last carbon source is a big one and where my interest has been given it can be affected by nutrition and management.

Up to this point, dairy farm enteric methane emission reductions and carbon marketing have been tied to adopting a new practice of using certain feed additives. Beyond feed additives, I believe the enteric methane source has amazing upside potential for us to influence.

A feed additive may lessen enteric methane emissions by 5%, but think back to the range in feed conversion efficiency described above for high-output dairies. If less feed is consumed to produce a hundredweight of energy corrected milk, then less carbon will be lost through enteric methane emissions.

A 5% change in dry matter intake is roughly 3 pounds, whereas the survey referenced above observed a 10-plus pound range in dry matter intake for high-output herds, and dry matter intake is a strong predictor of enteric methane emissions. For these reasons, and to more effectively market carbon sequestered via enteric methane emission reductions on dairies, dairy farm carbon footprint assessments need to become more mainstream.

A good place to start

Just like when opening a new checking account at the bank, an effective dairy farm carbon footprint assessment can document the current carbon balance on your farm. Care should be taken here, as once an initial carbon footprint has been established, future benchmarks relative to this starting point are valuable. Ideally, carbon insets for your dairy can be modeled, banked, and then marketed to buyers interested in lessening their business' carbon footprint.

The nutrition and management inputs for carbon footprint modeling need to be advanced to catch up with the field and manure sources, though we're on our way. I hope you'll share my excitement as we expand our dairy farm benchmarking efforts by wading into carbon footprint and life cycle assessments.

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