by John Goeser

Check your herd's fuel efficiency

WHILE consulting for a dairy business in Australia roughly 10 years ago, I remember seeing small pickup trucks or "utes" with diesel engines for the first time. The ute was an Australian term for a small utility truck. These were very popular Down Under, yet smaller diesel engines in pickup trucks hadn't caught on in the U.S.

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To me, these smaller diesel engines seemed like a great addition to the utility truck lineup due to the combination of torque and fuel efficiency. It took me a few minutes to convert the fuel efficiency of these utes to miles per gallon (mpg). Of course, mpg is a key performance indicator (KPI) that I often reference and could readily interpret.

In Australian and other European countries, the fuel efficiency KPI is characterized as liters of fuel per 100 kilometers. Rather than projecting how far we could travel with a gallon of diesel or gasoline, this liters per 100 kilometers is an alternative metric speaking to how much fuel is required to travel 100 kilometers. This is similar to how we should be thinking about inputs on our dairy farm . . . feed and costs per hundredweight (cwt).

Move to a better way

Traditional KPIs have been defined in per cow per day units, such as milk production or feed costs per cow per day. In my mind, this isn't the best way to benchmark in today's margin-focused economic environment. Case in point, Holstein cows produce more milk than Jerseys. With an old school KPI, the Holstein would be assumed to be more productive. However, is a Holstein really more productive economically? This is a contentious point for some.

A Jersey consumes less feed and maintains less body weight, which reduces diet energy spent on body maintenance. Hence, Jersey dairy cows can, at times, out compete Holstein cows when the KPI is defined by feed conversion efficiency and economic performance.

Production efficiency is a newer focus with both research and nutrition technology, yielding exciting developments related to improved margins and reduced emissions. This latter topic will be covered in future Feeding Fundamentals articles. However, the focus here relates to the 2021 corn crop and initial thoughts as we begin feeding this silage and corn.

Release that starch

As discussed in "Ferment and grind are the corn buzzwords," published in *Hoard's Dairyman Intel* on October 18, 2021, this year's starch digestibility is down for corn silage. On the flip side, the corn crop appears to be yielding fantastic grain quality from a grain farmer's perspective. Bushel weights are up and the grain is handling well with less fines.

However, from a dairy cow's perspective, these characteristics are the opposite of that desired for optimal rumen performance. Grain hardness is inversely related to digestibility. Understanding this year's grain is "hard" in silage and corn, we're also recognizing that rumen and total tract starch digestibility are substantially down.

Rumen starch digestibility directly corresponds to microbial protein growth, dietary energy, and also dry matter intake. Michigan State's Mike Allen has discussed how starch digestibility can relate to dry matter intake through a hepatic oxidation theory. Rather than delving into nutrition and biological science, trust that optimal rumen starch digestibility can help keep dry matter intake in check with high performing dairy cows.

When starch digestibility is limited, cows may eat more in addition to producing the same or less milk. There are grain and silage quality plus biology factors at play, with the net outcome being more feed to produce a hundredweight of milk. Think of this case like a diesel hogging ute, with a fairly large liters per 100 kilometers.

Consider fiber and starch

We're early in our experience with the 2021 crop. In a couple of intriguing discussions with two different nutritionists, we talked through how several of their dairy herds have maintained milk production levels when transitioning to 2021 silage. Their observations didn't seem to fit my general impression relating to 2021 silage feeding poorly with less digestible starch.

To understand this phenomenon, we need to consider fiber quality as well as starch. Starch represents roughly 60% to 80% of the digestible energy in corn silage, while fiber represents the rest of the energetic value in silage and also strongly ties to dry matter intake. Silage and grain starch digestibility is substantially down, but fiber digestibility has been up for some, depending upon local growing conditions.

In the couple seemingly illogical dairy examples, milk production per cow was maintained from old crop to new crop, but we also needed to consider dry matter intake. My speculation is that intakes were up with improved fiber digestibility, despite maintaining the same milk production per cow. The production efficiency consequently dropped off.

Monitor the situation

To thoroughly understand how the 2021 crop is feeding, we need to monitor both milk production and dry matter intake. This is like measuring how many liters of diesel are needed to travel 100 kilometers. Work with your feed manager and nutritionist to monitor feed conversion efficiency if you're not already doing so.

Moreover, the Australian fuel efficiency performance indicator was different from what I was accustomed to, yet it made sense and I had to reorient myself to this alternative performance metric. We need to do the same and ensure we have a handle on both milk production and dry matter intake with unique carbohydrate characteristics in this year's corn crop.

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