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## Manure starch check on aisle 4

**S**IMILAR to how my brother (an Air Force pilot) redirects his focus when conditions change, I've shifted the focus of my nutrition talks and meetings from discussing ways to boost production or gains to that of improving feed conversion. We've made this shift in the light of difficult economic conditions for dairy and beef producers.

The dairy market, for example, is flooded with inventory globally, and supply-demand economics are dictating lower mailbox milk prices. Feed costs have softened slightly but not enough to keep "average" farms in the black. Looking ahead, average is nowhere near acceptable anymore, and we should re-evaluate our budgets to remain economically viable for years to come.

### Nothing left to cut

There are two core paths to improve your monthly budget — produce more (and in turn capture more income) or spend less. With the world not necessarily wanting more milk at the moment, the latter core budget approach, spending less, is a more sustainable goal.

With most of the farms I've worked to support recently, nutritionists and owners have cut feed costs to the point where there is nothing left to take out of the diet without sacrificing health and performance. In some cases, too much has been cut already, and we've recognized some negative responses.

So, if we can't cut any more out of the

diets, how can we spend less on feed? The answer lies in feed conversion. We can find ways to feed a diet that provides more value per pound, thus reducing intakes and improving feed conversion efficiency.

The average dairy cow captures nutritional value from about 60 to 65 percent (total digestible nutrients; TDN) of the total mixed ration (TMR). The range around the mean is substantial, with some lesser performing diets only around 45 percent TDN and higher performing herds upwards of 75 percent TDN with high-quality forages and feed conversion.

There are a number of ways to gain more value per pound of TMR, with grain (starch) digestion being a big one. Diet starch comes from both forage and grain sources. Corn silage is making up more and more of the dairy diet, thus we should focus as much on kernel processing and starch digestion as we do on particle size with ground corn.

The more digestible the grain (both from corn silage and corn), the more energy available and less total intake needed to yield the same performance. In order to start understanding this on your farm, start with evaluating manure starch levels to find conversion opportunities.

Manure (fecal) starch evaluation is an easy place to start on-farm when troubleshooting economic performance to find opportunities. Both dairy and beef nutrition researchers have shown

us that manure (fecal) starch content is a great total-tract starch digestibility (TTSD) predictor. And TTSD can be our indicator toward feed conversion efficiency, with the goal being greater than 98.5 percent TTSD for dairies and feedlots; or less than 1 percent and less than 2.5 percent dry matter fecal starch for dairy and beef, respectively.

Another way to grasp these benchmarks is to translate the TTSD into undigested corn grain equivalent like I did with a previous "Avoid feeding turkeys" article (*Hay & Forage Grower*, February 2018). In that article, we focused on dairy, but here I'll add a feedlot calculation to consider.

For a 22-pound dry matter intake finishing diet at 55 percent starch, a 93 versus 98 percent TTSD equates to about 1.8 pounds dry corn equivalent undigested and wasted, assuming 70 percent starch corn at 12.5 percent moisture. For the lesser starch digestibility case, steers may need to consume an additional couple pounds of grain equivalent through additional silage and grain to gain the same as a 98 percent TTSD situation.

### Reduce particle size

In the event that your dairy or feedlot identifies feed conversion opportunities with fecal starch, find ways to a finer grind or further process your silage and grain. Grain digestibility is largely dictated by particle size, seed genetics, and Mother Nature during the growing season. Then, ensiling further improves feed conversion potential with silages, high-moisture corn, and snaplage or earlage.

Steam flaking is another option to improve feed conversion by expanding the surface area for digestion, disrupting the hard starch, and then also changing the density, which may lengthen rumen retention time.

Work with your seed adviser and nutrition consultants to balance the factors that impact TTSD. Then assess the impact on feed conversion for your farm. ●

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