

On-farm feed diagnostics

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FT. ATKINSON - Since feeding cows is part science and part art, dairy producers need to aim for the sweet spot.

"That's not the same for every farm, but I think when cows are really milky, there are some things that can be bookmarked," Dr. Mike Hutjens, University of Illinois professor emeritus, said during the latest Hoard's Dairyman Webinar.

The presentation was hosted by Corey Geiger, managing editor of Hoard's Dairyman, and sponsored by Ajinomoto Heartland.

When all is working well on a dairy farm, milk flow is not restricted. When problems occur, dairy producers need to track down the problems and de-bottleneck the situation.

Hutjens listed 10 on-farm tools and measurements to use to improve profits, milk yield, feed digestion, health and reproductive performance.

They are grain particle size, forage particle size, silage fermentation, milk urea nitrogen, feed efficiency, fecal washing, scoring and starch values, locomotion scoring and body condition scoring.

Feed efficiency

Feed efficiency can be used to evaluate the rela-

tionship between milk yield and dry matter intake, to monitor changes with forage and rations, and to compare group values on the farm.

It is the pounds of 3.5 percent fat corrected milk divided by the pounds of dry matter actually consumed.

The target is over 1.7 for mature high group cows, over 1.6 for first lactation high group, and over 1.5 for one group TMR herds. Hutjens advises doing some detective work to find out what's going on if the number falls below 1.3 for any one group.

He argues there is money on the table, since there is a cost to the dry matter consumed, and it is especially important when margins are tight.

Milk components is another useful tool because, as Hutjens put it, "the cows are actually talking to us."

There is a milk fat and protein relationship that can be used as a benchmark. Garnered from the breed association as reported by Hoard's Dairyman, it is the pure protein level divided by fat.

With Holsteins, for instance, 3.0 percent protein would be divided by 3.66 percent fat to get a ratio of 82 percent.

"So are you achieving or exceeding the breed average?," Hutjens asked.

If the protein/fat ratio



Holsteins in Green County get their fill of chopped hay. Since feeding cows is part science and part art, dairy producers need to aim for the sweet spot.

is over 0.9, cows are missing milk fat, which could be caused by the source of added fats and oils in the ration, rumen acidosis, or a shortage of feed intake.

If the ratio is less than 0.75, the cows are missing out on milk protein, perhaps because of an amino acid shortage or imbalance, lack of microbial amino acid production, or lack of rumen undegraded protein.

Again, there are dollars on the table, Hutjens contends.

"And I will argue with you that milk protein is going to become more valuable," he added.

Research shows the possible benefits of feeding rumen-protected amino acids are increases in milk protein, milk yield and milk fat.

Hutjens believes dairy producers should be run-

ning a rumen model. Evaluate for the sweet spot, he advised, with the current suggested target of 2.8:1 lysine to methionine ratio. Determine a cut point on protein yield, such as herds producing less than 2.4 pounds of true protein.

Using forage values

Forage NDFD and uNDF values can also be used, with Hutjens using NDFD30 and uNDFom240 for corn silage fiber values.

NDFD is important to look at because of the relationship between forage NDF digestibility and cow performance. For every one percentage-unit increase in NDF digestibility, expect an increase in dry matter intake and in fat corrected milk.

"The uNDF and the NDFD give me an index of the quality and digestibility of the corn silage on the farm and so, if I go from one crop to another, from one year to another, it gives me a pretty good idea," Hutjens explained. uNDF in a ration determines the rumen fill from forage sources and/or minimal rumen fiber function (also known as the straw effect). The suggestion is 0.35 to 0.40 percent of body weight, with Hutjens citing a guideline of five pounds of uNDF-240 for a Holstein.

"This is a powerful tool that I think we should be using on our dairy farms," Hutjens noted.

Measuring feed particles

Corn particle size is another potent tool.

"The same corn, depending on whether it is cracked or ground or steam-flaked or finely ground, has a different energy value for my dairy cows," he pointed out.

The rumen degradation rate, whether slow, moderate or fast, has an impact on milk production, milk protein, butterfat test and energy from the rumen, which has an effect on body weight loss.

Measuring particle size with a screen system will tell if the dairy is hitting the marks for grinding its corn in the most beneficial manner.

The corn kernel processing score, which ranges from poor to adequate to excellent, has a spread worth measurable pounds of milk.

"When we have a poor job, we lose two pounds of milk. When we have an excellent job, we gain two pounds of milk," Hutjens noted.

Dairyland Laboratories shared their corn processing silage scores for the 2016 crop year. Of 1,010 samples, 31 percent were marked excellent, meaning over 70 percent of starch passed the 4.75 mm screen.

Another 55 percent were marked adequate,

meaning potentially two pounds of milk was left on the table, Hutjens reported, while almost 14 percent of samples were in the bad area.

"That means they are leaving maybe four pounds of milk out there in the manure of the cow," Hutjens observed.

New technology

Dairy producers can now make use of rumination collars and ear tags. "We can now actually measure the cud chewing effects," Hutjens marveled.

European data on daily rumination graphed against days after calving show how many minutes the cow chews her cud corresponds to whether she is healthy, has light or moderate levels of ketosis or metritis, or is suffering from a displaced abomasum.

By day four or five after calving, a healthy cow will be ruminating between 400-500 minutes a day.

"If she is below 200 or so, she is screaming at us that she has a health issue," Hutjens said.

Silage fermentation

Once silage has been harvested and processed correctly, the question switches to whether it has been fermented properly, which brings up issues such as silage inoculants, dry matter content and compaction levels.

"The question is do you check your grass and legume silages, your corn silages and your high moisture corn to see if you got it right," Hutjens said.

Evaluating manure

A cow's manure can be evaluated by scoring, washing it with screens, or by analysing fecal starch.

Scoring is quick and easy. It ranges from a 1, which is thin, fluid, arcs, is green and may still be bubbling to a 5 for manure that is dry and stacks up over three inches tall.

A score of 3 is desirable, meaning the manure stacks up 1 to 1/2 inches, has dimples, two to four concentric rings and sticks to one's boots.

"You can actually hear a 3 hit the concrete. It is a very distinctive sound," Hutjens noted.

Fecal starch can be determined by a lab. Dairyland Lab scored over 137 dairy samples last year, of which 33 percent had over 5 percent starch and were advised to investigate individual feeds.

The issue is important because of the milk response.

"The take home message here is for every 1 percent decrease or increase in fecal starch, you've got about 2/3 of a pound of milk," Hutjens said.

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