

Dairy efficiency: Energy-corrected milk per pound of dry matter puts power in the hands of feeders, nutritionists

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Faced with the challenge of balancing cow productivity with economics, feeding efficiency has gained increased status as a tool to guide dairy herd managers and their nutritionists. With today's tighter income margins, monitoring dairy feeding efficiency is more important than ever.

Dairy producers and consulting nutritionists were presented with some of the latest management practices to increase dairy operation efficiency during an inaugural Dairy Efficiency Summit, hosted by Papillon Agricultural Company. Held in mid-July in Green Bay and Madison, Wisconsin, the summit focused on dairy herd efficiency through genetic selection, feeding practices, improved management, new technology and environmental stewardship.

Among the presenters was Dr. Robert C. Fry of Atlantic Dairy Consulting, who offers combined veterinary and nutritional consulting services to dairy farmers in the northeast U.S. He is also a partner in a seasonal grazing Jersey herd near Kennedyville, Maryland.

Fry identified "tricks and traps" for nutritionists monitoring the production efficiency of their client's herds.

In a dairy herd, Fry defines "production efficiency" as the rate of milk flow per unit of dry matter intake, measuring the total nutrients converted to milk, fat and protein at the least cost. Subtracting from that efficiency are the nutrients lost to the environment as heat and waste.

Measure the right things

"When we're measuring dairy production efficiency and profit, there are a whole list of things to consider," Fry said. Many factors aren't useful, or must be considered in relationship."

Traditional efficiency measures can either miss key factors or attempt to include things which the dairy manager or nutritionist have no control over.

Fry said the milk-feed ratio, developed by USDA many years ago, is outdated and not useful under widely fluctuating milk and feed prices. Newer measurements also miss the mark.

"Milk per cow does not take into account the inputs and costs associated with outputs," Fry said. "Feed cost per cow doesn't tell you anything about milk production. Feed cost per hundredweight doesn't provide information on the hundredweights of milk produced, nor do you know what kind of milk the cow is producing. Is it 4.5 percent fat or 3.5 percent fat?"

While money-corrected milk per pound of dry matter intake provides a description of the value of milk, it considers milk price and other factors affecting the milk check, factors often not under the farmer's or nutritionist's control.

What is EC-DME?

As a nutritionist, Fry's gold standard for measuring feeding efficiency is income over feed costs (IOFC) per cow per day. His preferred method of measuring that efficiency is "energy-corrected milk per pound of dry matter efficiency", or EC-DME.

Energy-corrected milk includes the volume of milk, adjusted for protein and fat components.

Factors influencing EC-DME include cow health, herd reproductive wellness, diet formulation, forage quality, feed delivery, times per day milking, amino acid balance, use of rumen bioactives (yeast, monensin and probiotics) and use of recombinant bovine somatotropin.

“All of these things influence the energy-corrected milk per pound of dry matter intake, and all are under the control of dairy nutritionists and managers,” Fry said. “Measuring energy-corrected milk per pound of dry matter is easy to calculate and understand. There’s no lag time related to milk price or feed costs; it’s responsive to diet changes and it correlates well to management income over feed costs.”

EC-DME measures the efficiency at which the dairy cow converts feed to milk, adjusted to 3.5 percent butterfat and 3.05 percent protein, while accounting for maintenance and manure.

“Many producers don’t know what their number is, but they should and they should watch it change,” he said.

Fry’s EC-DME target is 1.6 to 1.8 pounds per cow per day. In a 500-cow herd, moving EC-DME up or down 0.05 will result in a tanker load of milk in one month’s time, he said.

Accurate information required

Today, complex models and software programs allow nutritionists to formulate diets designed to improve feeding efficiency.

But whether on the back of an envelope or in a more complex software modeling program, EC-DME requires accurate information. Entering the wrong data can dramatically affect calculations, resulting in overfeeding or underfeeding cows.

“Remember, all models are wrong, but some are more useful than others,” he said.

Common traps include unknown cow numbers, not accounting for feed refusals, cows in the hospital pen or failing to adjust for milk fat and protein.

“You have to know your cow numbers. Hospital pen cows have to eat, but you can’t sell their milk. You have to adjust milk for fat and protein, and you must account for refusals,” he said.

Entries should include animal descriptions, since stage of lactation greatly impacts efficiency. Forage assay results and grain and forage costs must be accurate.

Body condition scores are critical. When body condition scoring, Fry recommends focusing on three key groups: cows going dry in the next two weeks or 30 days, close-up dry cows and fresh cows.

Feed center critical

Fry identified a final trap.

“Don’t get so caught up in precision feeding that you miss the big picture associated with feeding efficiently,” he said. “Don’t forget what happens at the feed center.”

Feed center factors impacting feeding efficiency include the quality of forage storage, bunker or pile packing, mixing and metering, the quality of commodity shed or bins and accurately checking and adjusting dry matters frequently.

What is most important in achieving peak feeding efficiency? Perhaps surprisingly, diet formulation ranks at the bottom of the list, and many factors are out of the nutritionist’s hands.

“The cows are most important,” Fry said. “You must have healthy cows and pregnant cows so you have fresh cows. If you don’t have that combination, you won’t be able to feed efficiently.”

“Next, the feeder is very important. As nutritionists, regardless of what we do, the feeder has control,” he said.

Other factors include making feeding adjustments based on forage moisture and analysis, having accurate descriptions of animal inputs and knowing the modeling and software platform.

“As a nutritionist, it is humble pie, but our ration formulation expertise is the last one on my list. All the other things can trump the work of the nutritionist,” he said.

Fry urges nutritionists to keep it simple. Depending on the individual dairy’s management style and capabilities, EC-DME can be used to manage individual cows or pens.

Directly related to the impact of management, nutritionists can use EC-DME to enhance services through team building, identifying bottlenecks, pinpointing opportunities, monitoring and motivating.

For more information, visit [Atlantic Dairy Consulting’s website](#) or [email Dr. Robert Fry](#).



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