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Cheap and easy grassfed test on back burner

By Martha Hoffman

With strong consumer demand for grassfed products, dairy graziers and grassfed dairy marketers would like to have better ways of verifying that milk being sold with grassfed claims has actually been produced from forages.

Current procedures for verification, such as the reliable gas chromatography test that analyzes the fatty acid content of the milk, are expensive, time-consuming and focus on the nutritional components of grassfed milk rather than providing evidence to combat "fake" pasture claims.

Logan Peterman, agricultural data scientist with CROPP/Organic Valley, says gas chromatography costs about $100 per test, with an additional $20-$30 for shipping to the lab. Results typically don't come in until two or three weeks after samples arrive at the lab.

Fluorescence spectroscopy is a test that could be faster and cheaper. The test involves light being shone through a sample of milk, with fluorescent markers measured.

In grassfed samples, traces of chlorophyll show more distinctly than in milk made from stored forages. Chlorophyll breaks down in the ensiling process and is degraded somewhat when forage is dried for hay, so stored forages have less chlorophyll than when fresh.

Dr. Mark Rasmussen, director of Iowa State University's Leopold Center for Sustainable Agriculture, says field-operated fluorometers can be purchased for a few thousand dollars and used for long periods. No other testing supplies are needed to perform a spectroscopy test, and results are immediate.

This spectroscopy test could potentially be done with just an extra sample taken from every farm's bulk tank, as is done for antibiotics and milk components.

With a fluorometer and a little training, anyone could learn to perform this test. In recent years the test has received some attention among farmers and consumers seeking truth in advertising for pasture claims.

Unfortunately, due to problems with the test and a lack of money for more research, fluorescence spectroscopy is not close to being ready for commercial use.

Initial promise fizzled

Rasmussen and Iowa State chemist Dr. Jake Petrich have been studying this light-based technique for several years, and initially it looked like promising. However, the test is not as straightforward as it seemed at the beginning.

"Like a lot of research, it's more complicated than we first hoped," Rasmussen said.

Variables are complex

In addition to the different profiles distinguishing fresh forage from confinement feeding, other variables such as cattle breed and age make it more challenging than had been anticipated in determining differences between grassfed and confinement milk.

"It is variable, but a general statement is that Jersey milk with its higher butterfat content tends to show higher signals (of chlorophyll content) in whole milk compared to Holstein milk," Rasmussen said.

This difference makes it harder to directly compare samples, and more study is needed to determine if a clear pattern can still be found with the variables that exist.

To date the research has been conducted using submitted samples from different herds. Rasmussen said the ideal way to continue would be to put a study herd on a range of different feeds and forages instead of just working with what the farms submitting samples were feeding. This could provide more data to help sort out the unknowns and perhaps find consistent patterns.

And there are complications in verifying the grassfed status of milk that has been processed and packaged. Since chlorophyll separates with the cream, the various fluid products (skim, 1%, 2%, whole) may behave differently and produce different values from the same forage diet, creating another level of unknowns that would need to be studied and standardized.

Funding dried up

But with the test not looking as promising as it did at the beginning, and the dairy industry under financial stress, funding for continued study has dried up. Rasmussen says spectroscopy technology is a long way from being commercially available to the dairy industry.

"More work is needed, and it's not ready for implementation," he reports.

Peterman says that Organic Valley remains interested in effective testing methods that could be reliable enough to add another incentive beyond the standard component and quality met-

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rics for farmers. He said consumers continue to push for greater focus on the fatty acid nutrients in milk made on pasture.

"We've seen a strong signal that consumers are paying closer and closer attention to nutritional density in their foods," Peterman said in an email. "Spectroscopy could offer a very strong new set of measures for consumers to both gauge the quality of that product, and indirectly to reward the farmers for producing more of it."

"Spectroscopy and the consistent measurement it could provide (OV) member farmers would likely become a part of the pay structure to incentivize members to select and innovate management tactics that increase levels of these key human beneficial fatty acids in the product," he added.

"Our experience says the best way to improve the nutritional density of milk is to incentiviae the farmers to innovate (generally on pasture)."

But at this point, with little money available in the dairy industry to fund more research into new options like fluorescence spectroscopy, comprehensive grassfed verification remains a far-off goal.

Martha Hoffman is *Graze* contributing editor based in Earlville, IL.

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