

Less lignin may mean more disease

THE business decision to purchase seed, grow, harvest, and then incorporate reduced-lignin forages into your high-performing dairy diets is more than a nutritional balancing act. Reduced-lignin forages now include brown midrib (BMR) mutants in corn



Goeser

and sorghum, a transgenic option in alfalfa, and a number of conventionally bred forages.

In working with and supporting forage management decisions over the past 10 years, we've long prioritized the yield versus quality balance in reduced-lignin forage economic evaluations and partial budgets. More recently, though, with plant disease pressure seeming to expand in some areas, we need to consider that lignin is also of benefit to the plant in the form of protection from disease — more on this dichotomy later.

Cows eat more

Nutritionally speaking, lignin is like the rebar in concrete. It solidifies the plant cell wall structure. Reduced-lignin forages make the most sense to consider in transition and high-intake dairy cow diets where gut fill and dry matter intake are paramount to health and performance. Lignin (and indigestible neutral detergent fiber;

uNDF) can contribute to gut fill in a similar fashion as overeating at the all-you-can-eat pasta bar.

The reduced-lignin forage nutrition impact is relatively well understood especially when compared to other seed genetic technologies available today. For example, bm3 corn hybrids have been grown, fed, and assessed in numerous dairy feeding studies, and they demonstrated improved milk production performance when measured against conventional hybrids.

Performance improvements often seem to coincide with substantial intake gains. It's not clear if intakes drive performance or vice versa, but in most cases, feed conversion efficiency wasn't evaluated. In today's market, feed conversion efficiency needs stronger consideration in our nutrition programs as the market has been saturated with production globally.

The yield impact and implications with reduced-lignin feeds are a hot topic but far from soundly understood. After compiling and summarizing several years of University of Wisconsin hybrid evaluation trials with corn (on hoards.com/hybrids) and reviewing a recent University of California, Davis study with reduced-lignin alfalfa, we've recognized lesser yields with reduced-lignin forages managed and harvested in similar fashions as conventional genetics in some cases. To me, this makes sense as lignin is imperative to plant integrity and health.

Raw yield differences are less meaningful, though, and our goal needs to be to compare seed genetics

on a digestible yield (digestible tons per acre) basis. Work with your nutritionist and seed advisers on this concept and calculate digestible yield.

With alfalfa, there is also the potential to extend the cutting interval or harvest window and maintain quality as shown in the University of California, Davis study. This warrants further investigation and could prove to be a sizable risk mitigation strategy for growers.

Now consider plant health

Plant disease resistance deserves a growing amount of attention as many are experiencing more plant pathogen pressure each year, and "clean feed" is a new focus. Take, for example, a new fungal plant pathogen called Tar Spot that has emerged in many corn growing regions of the Upper Midwest.

According to Damon Smith, University of Wisconsin-Extension plant pathologist, the only preventative measure currently known to limit its effect are disease-resistant hybrids. Smith has also taught that stalk strength can be a proxy for disease resistance where disease ratings aren't available. Lesser stalk strength would equate to greater stalk rot susceptibility, and reduced-lignin hybrids typically exhibit reduced-stalk strength.

According to USDA-ARS Research Plant Physiologist Ron Hatfield, one of the plant's defense mechanisms to insect or fungal damage is to lignify around the damaged region. With a reduced ability to lignify, the plant is also less apt to protect itself from damage. Thus, reduced-lignin corn hybrids

are likely more susceptible to plant disease and damage. Additional crop protection investments should be considered, while monitoring crop health during the season is a necessity.

The bottom line is that nutrition, disease resistance, and yield must all be considered in hybrid selection.

Over the past 10 years, brown midrib corn silage has been a hot-button topic with producers and industry consultants. I've stressed balancing yield and quality, yet we need to transition to better balancing yield, quality, and plant health.

What used to be a teeter-totter is now like balancing a plate on a stick, and that act is increasingly complex. Further, as nutritionists, we need to ensure we're including feed conversion efficiency within our assessments.

To review, work the following items into your partial budgeting approach and value-centered decision-making process: 1) seed cost, 2) fertility and crop protection input needs, 3) yield, and then 4) nutritional quality and feed conversion impact.

Consider risk in your evaluation as well. This could be lodging potential or the capability to maintain quality following longer cutting intervals when weather delays harvest.

Yield and nutrition quality need to be assessed on your farm, under your growing conditions and management. Bring your nutritionist, seed adviser(s), agronomist, and crop harvest team to the table to plan plots to test new seed genetics, and then work through the budget and balancing act together. 🐄

Goeser is the director of nutritional research and innovation with Rock River Lab Inc., Watertown, Wis., and adjunct assistant professor, dairy science department, University of Wisconsin-Madison.

What's wrong with this heifer?

by Gerald R. Anderson

THIS is a story about a farm that has been in business for many years. The cows are high producers on good rations.

This farm had a heifer that was having problems calving. The calf was backwards and had to be pulled. The calf lived and seemed to be doing fine, but the heifer that had the calf was totally exhausted and was having trouble cleaning. The farm owner moved the heifer to a grass paddock so it could finish cleaning.

Five hours later, the heifer cleaned but still seemed distressed. Upon further examination, it was discovered that the udder was extremely swollen with two teats that were a translucent purple color. They tried to strip milk out of these two teats but nothing came out except air, and the heifer had two large swollen areas on its side that weren't there just hours before. The areas were very spongy, like they were filled with gas.

What is wrong with this heifer? Is this animal:

- A. A fresh heifer with very toxic mastitis.
- B. A fresh heifer with an extremely aggressive

case of udder edema.

C. A fresh heifer with a case of blackleg.

D. None of the above.

The correct answer is D. This heifer actually had herpes.

Herpes? Cows can get herpes?

Yes, indeed. It is called bovine herpes mammillitis or bovine herpesvirus II. Usually, it is not a cow that shows symptoms — it is a first calf heifer. The outbreaks usually occur in late summer or early fall or winter when cold weather is starting to set in.

Bovine herpesvirus II is a virus, and there is no direct treatment for it. According to veterinarians I have talked with, this virus used to be more prevalent several decades ago than it is now. There could be nutritional or environmental factors.

Once afflicted, about all you can do is give an animal support therapy and hope for the best. Affected teats on herpes animals with the most severe attacks often turn black and fall off. It is not uncommon for the animal to die.

Occasionally, with proper support therapy, some animals survive and can be milked on three quarters. In less serious attacks, dark-colored



painful scabs and ulcers appear on teats, but they dry up and fall off.

No matter how long you have been in business, unusual things will occur on any dairy farm, and it is the farmer who bears the economic brunt of biological disasters. So, when you are planning your budgets, always have some leeway for the unexpected. 🐄