



**WHEN MOVING TO A LOWER FORAGE DIET**, you must maintain effective fiber and cud chewing to promote rumen health.

Midwest and West where we have exceptional growing conditions but lower digestibilities. In this case, plant health is exceptional, tonnage is strong and grain yields are tremendous; however, forage digestibility suffers through an increase in “woodiness” to the stem, stalk or elevated grain hardness.

Based on my experience and the experiences of many nutritionists from the South, Midwest and Western U.S., we just can't feed a typical ration because the rumen fills with indigestible forage fiber.

### Low forage TMR considerations

With the situations outlined above, dairy enterprise economics dictate we need to maximize income over feed costs. In some cases, that means we minimize the amount of dry hay and forage in the diet, optimize our inventory and keep cattle healthy. Below are some considerations for your dairy under these circumstances. As with any nutrition discussion, work with your nutritionist and consultant team when “thinking outside the box” since no two farm situations are the same, and these considerations may not be appropriate for your farm:

Ration starch content should be lowered to avoid an acidic rumen. As starch is digested, lactic acid becomes a potent pH-dropping acid. Starch levels can be dropped to 20 percent or less while still maintaining performance.

Along with this, diet forage and forage fiber levels can be dropped. Cows and rumens can be healthy with 16 percent forage fiber (even down to around 30 percent forage) or lower if effective fiber is maintained and cud chewing and rumen health continues as normal. You can consider straw or dry hay to maintain cud chewing and rumen function.

The diet fiber content can be elevated. With less forage and more high-fiber by-products, ration NDF (neutral detergent fiber) can actually reach 38 percent or higher and maintain performance.

NRC (2001) has recognized and recommends that, as forage fiber is reduced, overall diet NDF should hike to maintain a healthy rumen. Improved fiber digestibility and soluble fiber can help keep energy levels high.

Consider adding a sugar or nonstarch NFC (nonfiber carbohydrate) source to maintain rapidly digestible carbohydrates. Sugars are digested differently than starch, producing energy sources other than lactic acid. However, they can help maintain a healthy pH while also providing concentrated energy. Added sugar levels up to 10 percent or more may be reasonable.

Measure feedstuff nutrient levels if you have more than 3 pounds of that ingredient in your ration. This thumb rule is quite valuable when consulting because I have noticed a fair amount of variation in commercial by-product feeds. DePeters et al. (2000) found variability in California by-products compared with prior data, and Weiss et al. (2012) suggested that crude protein and NDF for concentrate feeds vary substantially.

Effects on cows might be observed if we don't account for this variation. We often measure the feed value for dry hay or other forages when feeding as little as 1 or 2 pounds in the ration, but we ignore nonforage ingredients. There may be more nutrient value (protein) in by-products than we know about.

As dairies that dealt with drought and escalating prices begin to push their inventories, options exist to lower forage levels to extend what's in the bunk. Work with your nutritionist to come up with favorable solutions.

# High forage isn't always your best option

When inventories are short or forages don't measure up, low-forage diets have merit.

by John Goeser

**D**IET roughage levels greater than 50 percent (high forage) are a continued hot topic. Dairies such as those featured in the *Hoard's Dairyman* Round Table (February 10, 2013, issue, pages 86 to 88) have improved profitability by producing high-quality forages, feeding it at elevated rates and reducing



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purchased protein and grains. At least one of these dairies estimated that margins over feed cost were improved by approximately \$2 per cow with high-quality, high-forage diets.

However, high forage does not always make sense; what if forage inventory and land base do not accommodate a high-forage diet? What if hay exports drive prices up in your area to a point where the best cost option is not high forage? What if forage digestibility is so poor that cattle capable of high performance aren't making the grade?

In these cases, your nutrition program turns unconventional. We think “outside the box” in making use of what other feedstuffs are available. There is no concrete mold we follow as nutritionists while dropping forage levels to 40 percent of your TMR or lower. While cows have effective fiber, protein and rapidly digestible carbohydrate (think sugar and starch) requirements, they do not have a forage requirement.

Traditional benchmarks, such as starch level or forage fiber minimums, can be stretched. In the next several paragraphs, I'll share a few scenarios that lead to unconventional diets and some experience and considerations for feeding when high forage isn't an option.

### Options are limited when

Several factors have come together and led to elevated forage costs or poor inventories in some areas. Land prices and rental costs have risen over the past several years as we've come to recognize \$7 to \$8 per bushel corn; in some cases, prices have reached unrealistic levels. In other cases or areas, land is not only costly but also unavailable as acres are planted to fruit trees or from the pressures of urban sprawl. In these areas, we're at an inventory shortage every year.

Last year, in many areas throughout the Midwest, land was available, but Mother Nature did not agree with our needs. The 2012 drought in the Midwest U.S. also created forage inventory shortages.

As China and the East grow and import more U.S.-grown hay, producers are recognizing higher and higher prices. The 2012-2013 drought in New Zealand may also be fostering export demand to feed cattle that traditionally have been grazers.

Here the cost of soy hulls, corn gluten feed, almond hulls, wheat midds and other forage substituting ingredients may be lower than dry hay.

There is another situation that may force a lower forage diet; not from shortages but rather a drop in forage digestibility. Experience with feeding forages during 2010 have shown there may be unique growing seasons in areas of the