

 Nutrition Plus West Central**IN THIS ISSUE:**

Byproduct Boom: Avoid Nutritional Bust  
Consultant's Corner: Monitor Distiller's Inputs With Care  
Quality Corner  
West Central Happenings  
Beyond Bypass: Bypass Protein 101  
From the Maternity Pen: Colostrum Pasteurization Shows Promise

## **BYPRODUCT BOOM: AVOID NUTRITIONAL BUST**

The ethanol explosion has taken the Midwest by storm, and is gradually moving into other parts of the country as well. Of obvious interest to those in the livestock sector, including dairy producers, is the potential availability of affordable byproduct feedstuffs.

Mike Hutjens, PhD, Extension dairy specialist with the University of Illinois at Urbana-Champaign, says, "Every dairy producer in my part of the country should at least look into feeding either wet or dry distiller's grains (DDGs). That's not to say these feedstuffs will work for all of them, but they are undeniably a readily available resource."

Dr. Hutjens says proximity is one of the keys to making distiller's grains work for dairy producers, particularly in the case of the wet product. He

### **WATCH OUT FOR MYCOTOXINS**

One often-overlooked hazard of feeding DDGs is the potential to magnify the deleterious effects of mycotoxins in corn.

In less-than-ideal crop years, mycotoxins such as aflatoxin and vomotoxin can reach dangerously high levels in harvested corn. Potentially, mycotoxin-contaminated batches of corn could be diverted to ethanol production because they have poor feed value. The danger lies on the other side of the process, when they are concentrated at even higher levels and fed

advises that transportation of wet distiller's probably should be limited to a 50- to 60-mile distance between the plant and the dairy. "You don't want wet distiller's sitting around," he says. "Secondary fermentation is a significant concern with this form — it can make the product unpalatable at best, and make cows sick at worst."

Cost is another important factor to consider.

Currently, distiller's grain prices have taken a healthy jump, in line with skyrocketing corn prices. Not long ago, DDGs were selling for \$90 per ton. Now, they range from \$135 to \$150 per ton. But, as long as corn prices are high, Dr. Hutjens says distiller's grains are still a good buy at current prices. "At \$3.50 per bushel corn, I've calculated that producers can still save money by paying \$204 per ton for DDGs," he says.

Both Dr. Hutjens and Corwin Holtz, private consulting nutritionist with Holtz-Nelson Dairy Consultants, Dryden, NY, say that the variation in quality — particularly fat content — is a major watch-out for feeding distiller's byproducts. "I would be a lot more enthusiastic about feeding them if we could be ensured fat levels of around 8 percent," says Holtz. "But I've heard of levels as low as 6 percent and as high as 20 percent, which is an unacceptably high load of unprotected fat for a dairy ration."

Dr. Hutjens says that "free" (unprotected) fat can wreak havoc in the rumen, converting to conjugated linoleic acid (CLAs) and suppressing milkfat synthesis in the mammary gland. "Note that this process does not make cows sick, but it can cause a significant drop in butterfat production," he states.

Typically, distiller's grains are used as a protein source in lactating dairy rations, taking the place of such feedstuffs as soybean meal or canola meal. Unlike these products, distiller's grains are low in lysine, and the nutritionists caution to keep an eye on the total ration amino acid profile. "Check the ration against NRC 2001 guidelines, the CPM-Dairy model, or AminoCow<sup>®</sup>," advises Hutjens. "You may have to add back some protected lysine with a heat-treated soybean meal product (such as SoyPLUS<sup>®</sup>) or blood meal."

Likewise, additional starch may be necessary to balance the ration. "If distiller's byproducts are being swapped with corn, the starch level drops from about 72 percent in corn to 2-3 percent in distiller's, while the protein increases from 10 percent to 30 percent," Dr. Hutjens explains. "A new source of starch or sugar, such as wheat, barley, hominy or bakery waste will be required to regain balance."

Holtz says that for some nutritionists and producers, the intricate process of adding, rearranging and substituting feed ingredients may be too cumbersome and inefficient to be of value. "DDGs take up a lot of dry-matter space in a ration," he says. "If I can readily access a more concentrated source of digestible protein and starch, I'd be less likely to recommend them." On the other hand, if a dairy has convenient and easy access to a plant, and the price is right, Holtz adds that distiller's grains could be very workable ingredients.

He and Dr. Hutjens offer a final heads-up regarding the changes in manure phosphorus levels that will result from feeding distiller's products. "In recent years, we've made a conscious decision to lower lactating-cow phosphorous levels, and they have done fine," says Holtz. "Distiller's products will raise the level of phosphorus in diets — and the resulting manure they produce — considerably." Dr. Hutjens says dairy producers may need up to 35 percent more land to spread manure with such elevated phosphorus levels. "They will need to revisit their nutrient management plans and adjust accordingly," he advises.

Both experts conclude that the decision whether or not to embrace distiller's grains as a component in lactating dairy rations will truly be a dairy-by-dairy process. "It's going to have to be a team effort, because it will impact so many management areas on the dairy," suggests Dr. Hutjens. "Producers will need to confer jointly with their nutritionists, veterinarians and agronomists. Some herds will do great

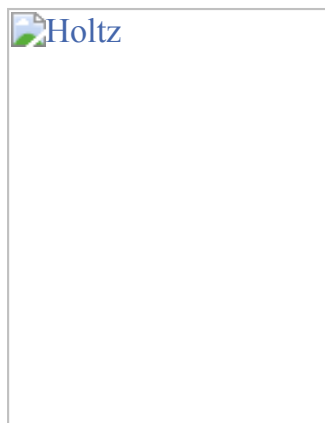
to livestock in the form of DDGs.

Both Dr. Hutjens and Holtz caution that mycotoxins in DDGs are an issue without clear resolution. "The best advice I can offer is to know your supplier," says Dr. Hutjens. "They should have a clearly documented commitment to providing a quality product."

feeding distiller’s grains at eight pounds of dry matter. Some will do well at five pounds or two pounds, and some may not be able to utilize them at all. It’s a very individualized decision.”

## CONSULTANT'S CORNER

# MONITOR DISTILLER'S INPUTS WITH CARE



*Corwin Holtz, MSc, Holtz-Nelson Dairy Consultants, LLC, Dryden, NY*

Ethanol plant construction in the Northeast is a few years behind that of the Midwest, with the first facilities just beginning to grace the horizon here. A handful of dairies in this region already are feeding wet distiller’s grains imported from Canada. Some of my clients are planning to feed them when nearby plants are up and running. And many more have questions about the viability of using the byproduct in their lactating herd rations.

The biggest issue I have with feeding distiller’s grains, be they wet or dry, is consistency. As the products become more readily available to my clients, I will counsel them to continuously monitor the following:

**Nutritional content** – Although technology does not exist to screen every load as it comes onto the dairy, I recommend regular laboratory analysis of fat and protein levels, mycotoxin load and NDF value (see Table 1). If these levels regularly exceed accepted limits or bounce around a lot from load to load, I would suggest switching suppliers or discontinuing feeding the product.

**Visual quality** – Overcooking dried distiller’s grains (DDGs) will destroy bypass protein, making the feedstuff indigestible and nutritionally useless. Each batch should be visually inspected for odor and color. Good-quality DDGs will have a slightly sweet alcohol odor, and a golden or light brown color. If a load comes in smelling burned and/or appearing dark brown or black, it is probably overcooked, and should be rejected.

### Desired quality levels for dried distiller's grains for lactating dairy rations, on a dry-matter basis

<b>Fat</b>	<b>&lt;10%</b>
<b>Protein</b>	<b>28-30%</b>
<b>Mycotoxins</b>	<b>0-.5 ppm</b>
<b>NDF value</b>	<b>30-34%</b>

**Butterfat test** – Butterfat suppression is a common side-effect of changing up the volatile acid profile in the rumen via a change in feedstuffs. Producers need to determine in advance the lowest threshold they are willing to tolerate in terms of butterfat suppression. A drop of a tenth or two in butterfat percentage may be deemed acceptable, but reduced component premiums could at some point negate the value of a cheaper feedstuff.

**Feed efficiency** – Ideally, producers should have a handle on feed efficiency before making any major ration change like switching to distiller’s grains as a part of their rations. Then, as cows take on the new formulation, they can assess whether feed efficiency suffers, improves or stays the same.

**Herd health** – Feeding distiller’s grains carries the inherent risk of pulling too much fiber out of the ration, and triggering acute or subacute rumen acidosis. Ongoing observation of manure consistency, incidence of displaced abomasums (DAs), changes in foot health, and possible monitoring of rumen pH, can aid in early detection of herd health disruptions. I predict that some dairies will feed distiller’s byproducts with great success, while others will determine that, on balance, their herd’s nutritional needs can be best met using other feedstuffs.

## QUALITY CORNER

Every once in a while we need to step back and look at things from all angles. How is a product

working? Is it working to its full potential? Could it be improved upon?

As some of you may have noticed, our SoyChlor product experienced some clumping tendencies in the totes and bags during storage over the last year. This was particularly evident during the hot and humid days of summer.

SoyChlor contains a large amount of distiller's grains. Accordingly, this feedstuff has a deserved reputation for bridging and packing in bins at feed mills. Adding hydrochloric acid to distiller's grains does not decrease this tendency.

We realize this is an issue for some of our users. We are taking a hard look into resolving the problem before the heat of summer hits us. We've already altered two SoyChlor ingredients to improve the flowability. We're also exploring two more future changes to the mixing process that we believe will also improve SoyChlor handling. These latest changes will be incorporated by summer. Most importantly, we pledge to continue to work to eliminate clumping as a SoyChlor issue this summer.

## WEST CENTRAL HAPPENINGS

West Central recently relaunched its site, [www.thegoldstandardagain.com](http://www.thegoldstandardagain.com). The site, originally released in October 2006, contains information regarding West Central's premier bypass product, SoyPLUS.

Relaunched earlier this month, the site now contains a complete listing of product information and facts. Additional information regarding both the SoyPLUS and SoyChlor products can also be found at [www.soyplus.com](http://www.soyplus.com) and [www.soychlor.com](http://www.soychlor.com).

Look for additional changes to the site, coming within the next couple of months!

## BEYOND BYPASS

### BYPASS PROTEIN 101

Selecting the best possible source of feedstuffs to supply bypass protein is an important consideration for dairy producers and their nutritionists. Charles Stallings, PhD, Professor of Dairy Science at Virginia Polytechnic Institute, provides the following assessment of feedstuffs containing RUPs:

**Alfalfa** – Dried alfalfa contains moderate amounts of RUP, but would have to be fed at extremely high volume to achieve necessary levels of bypass protein in the ration. Ensiling alfalfa results in even less bypass protein because of protein breakdown that occurs during the ensiling process.

**Barley and corn silages** – Both have low levels of bypass protein, although corn silage does have more nonfiber carbohydrates than barley and alfalfa silages due to the grain content.

**Wheat straw** – An excellent source of fiber, but low in protein, energy and nonfiber carbohydrates. Although on a percentage basis it does contain high RUP, it is not a major source because the overall level of total protein is very low.

### THE SOYPLUS® ADVANTAGE

SoyPLUS from West Central contains 100 percent U.S. yellow soybeans, with the fat mechanically extracted via a patented, proprietary process using an expeller press. The extracted oil is then degummed and used in the production of biodiesel. The gums — phospholipids (lecithin) including phosphatidyl choline — are returned to the meal.

The result is a product that consistently contains 60 percent bypass protein, is highly palatable, and contains more lysine and methionine — both important sources of amino acids to aid digestion in the intestine — than any other protein source.

**Blood and fish meals** – Both have been used as sources of RUP in dairy rations. They are both high in protein and contain 80 percent more of their total protein as rumen undegradable. Fish meal has more energy and fat, but less protein, than blood meal, which is mostly protein. However, palatability to dairy cows is poor for both ingredients.

**Soybeans** – Whole soybeans contain high levels of fat (about 20 percent) and are thus high in energy. But they contain less protein than soybean meal, and much of this protein is rapidly degraded in the rumen.

Soybean meal produced from solvent extraction of fat is not a good source of RUP, as this process only results in 30 percent RUP as a percentage of total protein. Mechanical extraction of fat produces friction and heating resulting in protein that is more resistant to rumen degradation (55 percent of total protein). Mechanical extraction also leaves more residual fat, creating a product that is higher in fat and energy, as well as RUP, compared to solvent-extracted soybean meal. In addition, mechanically extracted soybean meal is highly palatable and of uniform quality, with an excellent amino acid profile.

Dr. Stallings concludes that mechanically processed soybean meal is a consistent, palatable product that is relatively high in RUP. Because it contains more fat than solvent-extracted soybean meal, it is also higher in energy. Being 100 percent plant protein also makes it an attractive source of bypass protein.

## FROM THE MATERNITY PEN

# FEEDING STRATEGY FOR SHORT DRY PERIODS

Pasteurizing waste milk fed to calves has proven to be a beneficial — and now widespread — practice in the U.S dairy industry. Whether or not the bacteria-reducing benefits of pasteurization can be applied to colostrum as well has been a more complex issue.

While the timely delivery of colostrum is a cornerstone of calf survival, health and performance, colostrum also unfortunately can be a vector for the first exposure of newborn calves to a host of disease-causing organisms. The result: potential introduction of scours, septicemia, respiratory disease and Johne's disease.

University of Minnesota researcher Sandra Godden, DVM, DVSc, says initial attempts by herself and others to pasteurize colostrum unfortunately produced sub-par results. Using the same methods as pasteurizing waste milk damaged colostrum antibodies, with a 25-30 percent reduction in colostrum immunoglobulin (IgG) concentrations. It also caused the colostrum to thicken and congeal, hindering feeding and equipment clean-up.

Still convinced of the potential value of pasteurizing colostrum, Dr. Godden and her Minnesota colleagues initiated a new study in 2005, in which they lowered the temperature and extended the heating time of colostrum. Their study compared serum levels in calves fed raw, refrigerated colostrum to those of calves fed colostrum that was heat-treated in a commercial batch pasteurizer at 60°C (140°F) for 60 minutes and then refrigerated. Calves in both groups were fed 3.8L of either raw or pasteurized

### Comparison of serum total protein (TP) and immunoglobulin G (IgG) concentrations in calves at 24 hours of age, after receiving raw or pasteurized colostrum (P<0.05)

	TP concentration	IgG concentration
<b>Raw colostrum recipients</b>	<b>5.9 gm/d</b>	<b>17.5 mg/dl</b>
<b>Pasteurized colostrum recipients</b>	<b>6.3 gm/dl</b>	<b>22.3mg/dl</b>

colostrum within two hours of birth, using an esophageal feeder. Blood samples were collected from calves at 0 and 24 hours of age to measure serum total protein (TP) IgG concentrations.

Dr. Godden reports that calf serum TP and IgG concentrations were identical between the two groups of calves at 0 hours of age (pre-colostral feeding). However, both serum TP and IgG concentrations were significantly higher at 24 hours of age in the calves fed pasteurized colostrum (see table). What's more, the lower-temperature, longer-time method of heat treating produced no significant change in colostrum composition.

“When done in conjunction with efficient collection and delivery, and regular quality control, pasteurizing colostrum could significantly improve the health, survivability and performance of dairy calves in this country,” says Dr. Godden.



## West Central

406 First Street  
Ralston, IA 51459  
(800) 843-4769

[www.west-central.com](http://www.west-central.com)