

DIGESTIBILITY

Why and how silage management can save big bucks.

Who would have thought we would ever see corn trading above \$7 and near \$8/bu. on the Chicago Board. We were just getting used to the idea of \$6, then floods in the Midwest swallowed 5 million acres (and counting) of grain in June. Iowa, alone, is reported to have lost 8% of its corn crop (the equivalent of all the corn acreage of Pennsylvania).

Cool weather is also reported to have slowed corn progress in areas like Illinois, reported at half the normal height at the end of June. The season started with fewer acres planted to corn than last year's record high, and now the USDA Crop Progress reports continue to show crop ratings for corn and soybeans well below year ago—with a little more than half the corn (59%) and soybean (57%) crop rated good to excellent, nationwide, as of June 23.

Pennsylvania's weather in the coming weeks will be key as the corn crop here, so far at least, is fairing okay.

Bottom line is, high priced feed ingredients are causing major re-thinking of dairy rations. On June 27, USDA reported the national cash corn price at \$6.12/bu. (up 84 cents from May); soybeans \$13.50/bu and alfalfa hay \$161/ton.

From an economic standpoint, each \$1 increase in the price for a bushel of corn, typically increases the average dairy cow ration cost between 27 and 34 cents/cow/day. Rising prices for all feed ingredients are affecting the various measures of economic returns, such as the "milk-feed ratio" and "income over feed cost."

The milk-feed ratio is calculated by USDA every month. For June, it is at 1.78—down 0.05 from May and 1.10 lower than a year ago. The USDA figures a milk-feed ratio of 3.0 or more is "profitable." This essentially means that in June, dairymen could purchase 1.78 pounds of feed for every pound of milk they sold. The milk-feed ratio represents the pounds of 16% protein mixed dairy feed equal in value to one pound of whole milk, and it is calculated using the all-milk price and a weighted average for the price of corn (51%), alfalfa (41%) and soybeans (8%).

Even though some consider the milk-feed ratio to be outdated—preferring to gauge profitability by "income over feed cost" using a more modern-day ration—the milk-feed ratio calculations are what will be used in the new "Feed Cost Adjuster" added to the MILC program price trigger in the recently passed 2007 Farm Bill. The adjuster sets a "baseline" feed cost index of \$7.35/cwt of milk. Using the milk-feed ratio, USDA will calculate a monthly feed index used to "adjust" the MILC trigger. (*Details and sign up through FSA.*)

To determine on-farm profitability, "income over feed costs" (IOFC) is a much better measure. It's something every dairy farmer should get a handle on and monitor against benchmarks. One thing to keep in mind. Even in today's crazy market for feed ingredients, IOFC is highly dependent on milk production.

The Center for Dairy Excellence reports that when the price of milk was \$19.20 in May. A herd making 65 pounds/cow/day with a dairy feed cost of \$5.61/cwt of milk would net an IOFC of \$6.87/cwt of milk sold.

On the other hand, herds making 85 pounds/cow/day with a dairy feed cost of \$6.20/cwt of milk, would net an IOFC of \$10.12/cwt of milk sold. Even though their feed cost was higher, their INCOME over feed cost is 47% higher than the 65-lb/cow/day herd.

Penn State University measures a basic IOFC indicator, which uses a more typical ration fed to dairy herds today and is based on a Pennsylvania rolling average for milk production. This measure has declined from over \$9/cow/day in January to \$7.09 in May 2008. Corn and hay are the drivers.

Some experts say the ramp-up in ethanol production will benefit dairies by making available more distillers grains. But with distillers

come location, storage, transportation and "precision feeding" issues. At 30% crude protein, even if distillers are available at a good value, there is a limit to how much can be fed.

When combined with the alfalfa hay and/or silage in a ration, protein and phosphorus requirements of the cow can quickly be exceeded. This presents nutrient management issues for dairy farmers.

The natural choice is to feed more highly digestible corn silage as the primary forage in the ration when corn grain is partially removed. Corn silage is low in protein and provides fermentable starch, energy, and relative amounts of effective fiber (depending on particle size as determined by theoretical chop length).

What's the bottom line for dairymen? Focus on exceptional management of harvest and ensiling for high digestibility forages. This year, more than ever, silage management is money in the bank.

If you plan to decrease grain supplementation and still sustain high levels of milk production, you need to have highly digestible forages. Forage fiber represents the largest nutrient in a dairy ration. At the same time it is the most variable in terms of digestibility.

Forage fiber is analyzed as neutral detergent fiber (NDF) and acid detergent fiber (ADF). But this does not tell the whole story. How digestible is the forage? What is the cow actually getting?

Analyzing samples for NDF digestibility (NDFD) will provide an estimation of the energy the cow is able to obtain from a forage. For example, an increase in just one percentage unit in NDFD results in 0.37 lb increase in forage dry matter intake per day (Hoffman and Bauman) and a 0.55 lb/day increase in 4% fat milk yield (Oba and Allen).

Cows that are fed forages with greater NDFD are able to eat more and obtain more total energy from the forages. This results from a faster emptying of the rumen, which reduces distension and allows for even greater feed intake. As a result energy requirements can be fulfilled with less grain required in the diet. Always remember to pay close attention to the ration particle size, to make sure there's enough effective fiber.

Management for High Digestibility

Harvest Maturity: The relationship between kernel milk-line position and whole plant moisture content is **too variable** to be a reliable trigger for harvest (Shaver). It can vary by 20%! Use the milk-line position as an indicator for when to **start monitoring** whole plant moisture content, but harvest when the whole plant moisture content is 65-70%. Harvesting at the right moisture level is **critical** to prevent dry matter losses, preserve nutrients and digestibility, and ensure a good fermentation. Moisture management is money management, plain and simple.

Cutting Height: Talk to your nutritionist now about your feed needs and ration strategy and evaluate whether high cut corn silage is right for you. It may increase digestibility and energy as a percentage of the forage and has been shown to increase milk per ton of forage or milk per acre (depending on the hybrid), but a high cut will decrease total forage yield.

Chop Length: The recommended range is 3/8-inch to 3/4-inch and will vary by moisture content, hybrid and harvester. You want a good distribution of long particles for effective fiber balanced with smaller particles for good fermentation. Your AB nutritionist can help fine tune the cut based on farm-specific conditions.

Processing: The goal here is 95% kernel breakage and no cobs for greater starch digestibility.

Ensiling Process: This is critical. Pack to achieve 15 lb. DM per cubic ft. Distribute in 6-inch layers and pack continuously using a progressive wedge and a heavy tractor to get the pressure.

Microbial Inoculants: Talk to your AB nutritionist about inoculants to improve fermentation, which decreases DM loss in the silo.

