



IN THIS ISSUE:

(Click on headline to jump to story)

Look further out to solve transition ration failures

Consultant's Corner: Time to go beyond patching

Beyond Bypass: Importance of Histidine

Quality Corner: How are SoyChlor feed ingredients chosen?

From The Maternity Pen: Don't oversupply phosphorus for close-up cows

West Central Happenings: West Central honored for communications efforts

LOOK FURTHER OUT TO SOLVE TRANSITION RATION FAILURES?

At World Dairy Congress, a pre-eminent dairy scientist reports that a well-managed “steam-up” ration prepares cows for the stressful transition to milking, offering new opportunity to overcome natural limitations. The scientist was the late Bobby Bouffour; the year, 1928.

University of Illinois dairy nutritionist Dr. Jim Drackley, PhD, likes to cite that 80-year-old “new technology” as evidence that if you wait long enough, what’s old often becomes new again in dairy nutrition. Case in point: today’s renewed interest in far-off dry cow energy levels.

It’s been driven by a familiar problem: U.S. nutritionists and dairy producers enthusiastically embraced the idea of increasing the energy density in transition diets to overcome the natural decline in intake. There’s but one problem, Dr. Drackley points out. Surprisingly little research proves it really limits postpartum health problems or increases milk yield.

PROBLEMS MAY START EARLIER

Noting that most of those studies included no data on how cows were handled and fed in the first four to six weeks of a traditional eight-week dry period, Dr. Drackley’s research group considered whether the failures of close-up rations might really be problems that begin earlier.

His latest study, led by PhD student Heather Dann, fed 74 multiparous Holstein cows either a 1.30 Mcal NEL per kilogram diet containing about 26 percent chopped straw or a 1.59 Mcal NEL per kilogram diet based on corn silage and alfalfa silage. They then split those relatively higher energy-fed cows into two groups: ad lib or limit fed to about 80 percent of energy requirements. Three weeks before calving, they split all groups in half again, switching them to a typical close-up diet fed either ad lib or restricted to 80 percent of energy requirement. They found:

- Cows given free access to the higher-energy diet — a diet that’s probably actually less energy-

dense than the typical dairy's dry-cow TMR made from corn or barley silage and chopped alfalfa or grass hay — ate 160 percent of their NRC energy requirements. Obviously, dry cows are not good at regulating energy consumption, Dr. Drackley says.

- Dry cows fed either the lower energy diet ad lib or the restricted higher energy diet had higher DMI and energy balance and lower serum NEFA and BHBA during the first 10 days after calving.
- The best performance and health status occurred when the low-energy cows were given free-choice access to the close-up diet. The cows that fared worst were those allowed to overconsume far-off energy, regardless of whether the close-up diet was then restricted or not. And it wasn't a fat-cow problem. Average condition score was only 3.0 to 3.3 out of 5. Dr. Drackley suggests this finding may explain transition crashes on many dairies: cows fed too much energy early then get crowded, uncomfortable and given poor close-up diets that can't compensate for some metabolic effect being exacted by the early excess energy. That effect is still under study, but it could be an issue of rumen health and fill, insulin resistance, a rebound effect that further discourages post-calving DMI, or changes in the liver.



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BUT HOW TO GIT-R-DONE?

Dr. Drackley is first to point out that their cows were housed in tie stalls, making intake management almost as easily done as said. Still, his results suggest producers struggling with fresh cow problems may find it worthwhile to target energy dry-ration density in a range of 0.59 to 0.61 Mcal NEL per pound of dry matter.

Right now, it appears the most effective way to get that done is to add chopped straw. Drackley's group has also used oat hulls as a palatable low-energy ingredient, but the supply is variable and unpredictable. Other options may include corn stalks or stalklage, soybean straw, and flax shives. It may require up to 10 pounds of straw daily to get rations up to the 20 to 30 percent of dry matter needed to dilute the typical TMR's energy. Particle size should be about 2 inches or less, which likely means adding a bale chopper to the process ahead of the TMR mixer. You may have to experiment with adding water to maintain consistency. Any sorting will defeat the whole purpose.

RESEARCH PLUS

West Central is happy to support advances in understanding transition-cow nutrition, physiology and management, by donating some of the feed ingredients for the study conducted by Dr. Drackley and his colleagues at Illinois. Contact us for details on how the natural palatability of SoyChlor's hydrochloric acid can help prevent harmful DMI decreases.

LESS EARLY ENERGY = BETTER TRANSITION

Dr. Drackley's group showed the best performance and health status occurred when low-energy far-off diets were followed by free-choice access to the close-up diet. Cows allowed unrestricted energy fared worse, regardless of close-up diet.

Source: Proceedings of the Four-State Dairy Nutrition and Management Conf., Dubuque, Iowa, 2005.

	Far-off treatments			Close-up treatments	
	Low energy, ad lib	Moderate energy, ad lib	Moderate energy, restricted	Ad lib	Restricted
No. of cows	25	25	24	38	36
1 to 10 days in milk					
DMI, % BW	2.46 ^{ab}	2.16 ^{bc}	2.50 ^{ac}	2.38	2.37
DMI, kg	15.9	14.1	15.8	15.2	15.3
Energy bal.	88 ^{abx}	80 ^{bc}	93 ^{ax}	85	90
Milk, kg	29.7	26.0	26.4	27.7	27.0
Serum BHBA, mg/dl	8.13 ^{abx}	9.05 ^{ax}	6.61 ^{by}	8.06	7.80
Serum NEFA, mM	787 ^a	792 ^a	627 ^b	783	688
1 to 56 days in milk					
DMI, % BW	3.47	3.26	3.49	3.40	3.41
DMI, kg	21.8	20.5	21.4	21.1	21.4
Energy bal.	105	102	108	102 ^c	107 ^c
Milk, kg	39.5	36.9	37.0	38.0	37.6
Serum BHBA, mg/dl	5.80	5.82	4.97	5.63	5.44
Serum NEFA, mM	336 ^{ab}	376 ^a	296 ^b	356	316

a,b Means within row and treatment category with different superscripts differ (P < 0.05).

x,y Means within row and treatment category with different superscripts differ (P < 0.10).

CONSULTANT'S CORNER

TIME TO GO BEYOND PATCHING

Dr. Pete Drehmann, DVM, Crest Animal Health Services, Pulaski, Wis.

Every one of us has our own paradigms which are difficult to see past. I'm sure I have my own. To me, the current conventional wisdom that we have to force energy into these cows pre-calving to prepare them for the milk ration qualifies as a myth.

Are there producers and nutritionists who make energy-dense transition feeding work? Of course. Transition feeding has been around long enough that for many it's become a hard habit to break. But is it based on sound science? If you look at the scientific literature on adapting the rumen villi to accommodate a ration high in VFAs, you'll find it's been done not in Holstein cows, but predominantly in beef steers.

I have searched the work, done here and in Europe, and to date I think the best has come from Jens Beck Andersen, a Danish researcher. He published four papers on close-up dry cow feeding, concluding that feeding moderate amounts of starch to close-up dry cows has no positive effect on rumen papillae, dry matter intake, milk yield, rumen pH or metabolic disease.

HOW DID WE GET HERE? We sometimes forget that we're dealing with a cow, a living being. In many ways we've developed a feeding system that forces us to adapt the biology of the dry cow to it, rather than trying to adapt our system to the biology and physiology of the cow.

When dairymen "steamed up" dry cows 20 years ago using a hand scoop, the stakes weren't quite so high. But when they started switching to TMRs and calling it a "transition ration," we kind of lost control of the dry cows. We backed ourselves into a system that — entirely bent on taking advantage of the TMR in the milk ration, and rightly so — at the same time led to the dry-cow feeding problems we now have: difficulty incorporating hay, the impracticality of separating the groups and mixing multigroup TMRs, the inability to cost-effectively manage production of a relatively small close-up ration. So, basically, we wound up tinkering with different combinations of milking and dry rations fed for varying periods. And we had reasonable success. But for many, it proved to be an uneasy peace. We have paid for it in lactation.

TRYING TO PATCH THE FLAWED SYSTEM. One of the first things I learned upon entering veterinary practice is that 90 percent of the time a sick cow will get better — if we can just avoid doing her any harm.

So much of management that now goes into transition — although it works and isn't necessarily bad — is still simply a reaction to how this new system does harm to cows. All of us are trying to do the right thing for our clients. I don't doubt that. But transition feeding has put many of them into a spiral of



chasing DMI by adding energy which, if you think about it, naturally depresses DMI, which dictates adding more energy, which depresses DMI...

It's time to quit patching and to re-evaluate the system. Over the last 15 years, I have shifted all of my clients to a highforage, high-NDF dry ration, typically using chopped grass, wheat straw, soy stubble, or soy hulls which gives us about 50 percent NDF from forage, 9 to 13 percent starch, and 14.5 percent crude protein. We feed this ration up to the day of calving and then drop fresh cows right onto the milking ration. Our dry-cow ration is our close-up ration.

THE RESULTS. I have 2,000-cow dairies on this system easily milking 90 pounds on three-time milking who now routinely go months without a DA. At the same time, they've reduced the cost of dry rations significantly.

But I think the importance goes beyond that. One the best lessons I learned from Dr. Ken Nordlund at University of Wisconsin Veterinary School is that to succeed, a consultant has to learn to read between the lines and figure out what it is your client really needs. And I think the most valuable service we consultants can give today's dairy is to help them recapture some precious time. Even if this simpler system did cost slightly in production — which I'm not willing to concede — how much more productive would your clients' time become without one in three fresh cows standing in the treatment pen?

WEST CENTRAL HAPPENINGS

WEST CENTRAL HONORED FOR COMMUNICATIONS EFFORTS

At its Region III awards banquet, the National Agri Marketers Association recognized West Central's 2005 Annual Report, "Advance. Excel. Prosper. Succeed," with a first place in the category of public relations, company publications — annual report. The annual report was also recognized with the distinction of best of show — public relations. The best of show award recognizes the best of the best in the three categories of entries: advertising, public relations and specialty.

"Over the last several years we've really strived to provide our customers with quality communication pieces. We have a good story to tell and our goal is to tell that story in the most professional and presentable way possible," explains Bob Goldstein, West Central's executive vice president of administration.

FROM THE MATERNITY PEN

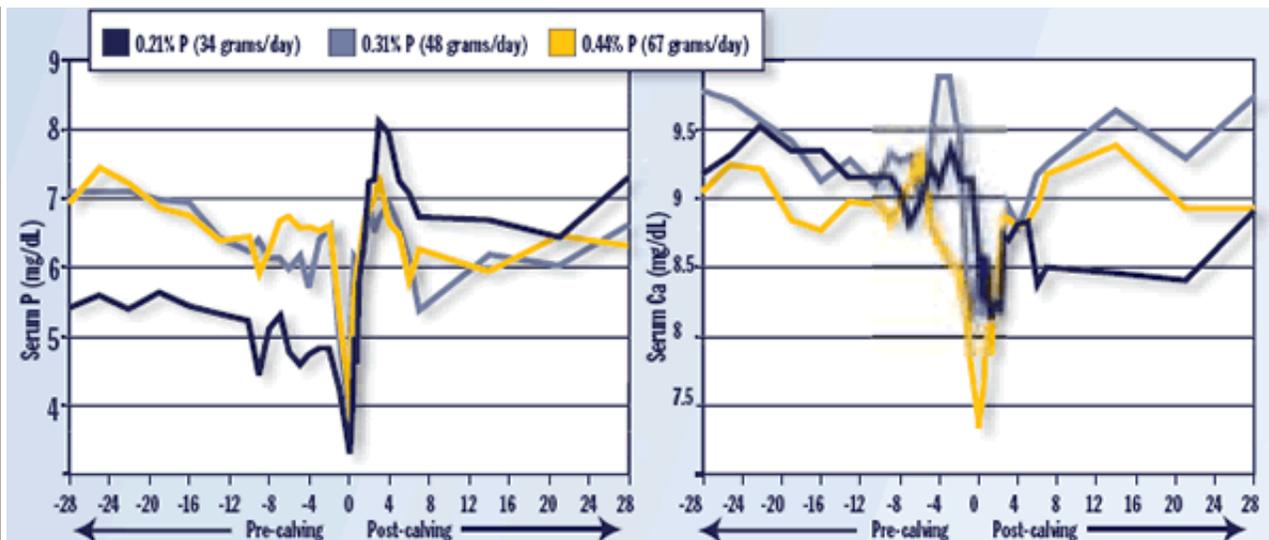
DON'T OVER-SUPPLY PHOSPHORUS FOR CLOSE-UP COWS

The role of phosphorus in close-up rations remains confusing. Although an anion and thus capable of acidifying the blood, research shows that at high levels it can actually induce milk fever. In one study, phosphoric acid was shown to lower urine and blood pH but also caused lower blood calcium levels. And high phosphorus levels can also interfere with the body's use of vitamin D.

Work reported by researchers at Michigan State demonstrates this often counter-intuitive nature of phosphorus. The researchers fed close-up cows three levels of phosphorus: 34 grams, 48 grams and 67 grams per cow per day. As you might expect, serum phosphorus was lowest pre-calving for the 34-gram group, but by two weeks after calving, levels were highest for that group. Serum calcium was also lower pre-calving for the high-phosphorus group compared to the two others. Since none of the cows showed signs of clinical hypophosphatemia, the researchers concluded the 34 grams, or 0.21 percent on a dry-matter basis, was sufficient.

DCAD WITHOUT EXTRA P

The 2.11 pounds of SoyChlor the Michigan State study added to each test ration contributed only about 5 grams of phosphorus. That low contribution of phosphorus from SoyChlor, while offering a highly palatable source of anions, makes it simple to maintain a limit on phosphorus in close-up rations without sacrificing DCAD flexibility. Based on studies like these, a level of 0.23 to 0.30 percent on a dry matter basis, or about 30 to 40 grams of phosphorus per day, will meet yet not grossly exceed the current NRC recommendations of about 0.23 percent dietary P for close-up cows.

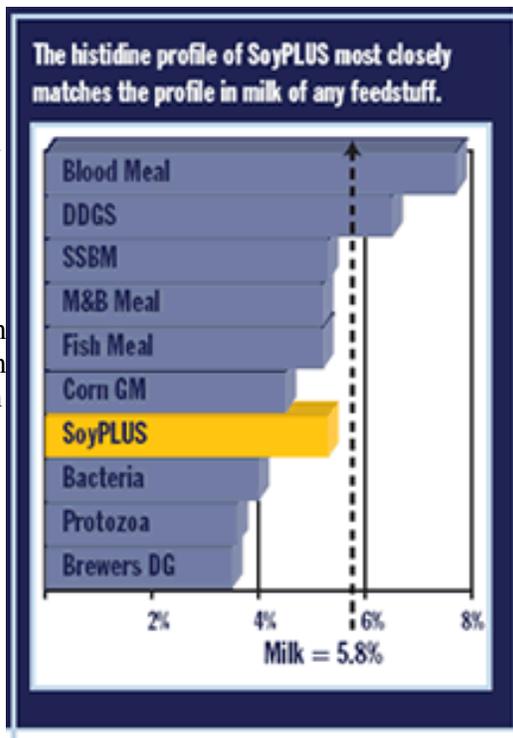


BEYOND BYPASS

IMPORTANCE OF HISTIDINE

Canadian research in 2004 showed infusing histidine intravenously into lactating Holsteins eating a corn/alfalfa silage TMR providing 17.7 percent crude protein and 1.7 Mcal/kg NEL on a dry-matter basis linearly increased milk protein content, yield and ratio to milk fat. A brief review of research by University of New Hampshire nutritionist and protein authority Dr. Chuck Schwabb, PhD, suggests that in the make-up of rumenally synthesized bacteria for milk protein synthesis, histidine may be more limiting than either lysine or methionine. Histidine is 2.0 percent of crude protein in rumen bacteria and 2.7 percent of crude protein in milk. In contrast, the concentrations of lysine and methionine are both nearly similar in rumen bacteria and milk — 7.9 and 7.6 percent, and 2.6 and 2.7 percent, respectively.

The implications are that on degradable rations in which bacterial protein constitutes a larger percentage of total metabolizable protein than in cows fed typical corn-based diets, histidine can become the first limiting amino acid.



QUALITY CORNER

HOW ARE SOYCHLOR® FEED INGREDIENTS CHOSEN?

West Central has chosen the carrier feeds for SoyChlor to be low in potassium and sodium. Corn distillers grains (DDG) are obtained without solubles — rather than with solubles — because sodium and potassium are concentrated into the solubles and thus less concentrated in the DDG. Brewers grains (BG) are also low in these cations, because the liquid portion is removed. We recently exchanged some of the DDG for BG. This will aid in flowability and improve the amino-acid profile while maintaining a low potassium level.

Chloride levels are checked hourly to ensure a constant chloride level. September '05 through January '06 results show:

	Percent	Standard Deviation
Chloride	9.16	0.29

Production of SoyPLUS® includes a stringent quality control program. In addition to our continuous monitoring using an in-house NIR we send check samples to Woodson-Tenent Laboratories in Des

Moines. These values from October through December 2005 (this crop year) are recorded on an as-fed basis:

	Percent	Standard Deviation
Dry Matter (N=31)	89.07	0.47
Crude Protein (N=31)	42.58	0.64
Crude Fat (N=31)	6.25	0.18



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