The Priority Report

Summer 2008

Change Rations, Cut Costs and Reduce Pollution?

The P-One Program™ Makes It Possible and Profitable

Nutritionist Tom Nauman with Lynn Royer from Elizabethtown, Pennsylvania

With rising feed costs, dairy producers are scrambling to find ways to cut feed expenditures without sacrificing cow health and production. One strategy is to lower protein and increase non-fiber carbohydrates (NFC) in conjunction with the Priority IAC P-One Program. The P-One Program has enabled many producers to make this ration change with exceptional results. And now it could play a key role in cleaning up the Chesapeake Bay.

Surrounded by Maryland and Virginia, the Chesapeake Bay is the United States' largest estuary. Because the bay is contaminated with excess nitrogen and phosphorous, dairy producers in the Chesapeake Bay watershed (which includes Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia) are being encouraged to get behind a new initiative* and adopt a program called Precision Feeding to reduce the amount of nitrogen and phosphorous excreted by their cows.

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In Pennsylvania, a partnership between the Chesapeake Bay Foundation, the University of Pennsylvania School of Veterinary Medicine, Pennsylvania State University, and the Pennsylvania Department of Agriculture is helping dairy producers implement Precision Feeding. The initiative involves analyzing the nitrogen and phosphorus levels in feeds on the farm, as well as the milk and manure, and working with the farms' nutritionists to adjust the diets to more precisely meet the cows' needs.

"The basic idea is to decrease the amount of nitrogen and phosphorous going into the cow to decrease nitrogen and phosphorous that leave the cow via the manure," says Tom Nauman, head nutritionist at Hoober Feeds, Gordonville, Pennsylvania, in eastern Lancaster County. "This type of diet is much like the diets recommended the last several years for use in the P-One Program – essentially decreasing protein intakes along with increasing carbohydrate intakes as a way to decrease costs without losing milk production."

From data collected on the herds implementing the Precision Feeding program, members of the Chesapeake Bay partnership note that

see page 2

95-Pound Tank Average, Over 30,000-Pound Herd Average and *Not a Rail-Thin Cow in Sight*

The cows at Duncan Farm eat. And eat. And eat some more. Accordingly, they milk and milk and milk some more, all while maintaining body condition. The secret? Daryl Duncan cites three major factors: frequent feedings, good feed, and the Priority P-One Program.

Duncan, his wife, Sally, and their three children raise registered Holsteins and Ayrshires near Warsaw, Ohio. Milked twice a day with no bST, the 50 Holsteins average 30,082 pounds of milk, 4.3% fat, 1,307 pounds of fat, 3.1% protein, and 939 pounds of protein. Fifteen Ayrshires average 25,934 pounds of milk, 4.7% fat, 1,215 pounds of fat, 3.3% protein, and 843 pounds of protein.

see page 4

Change Rations, Cut Costs and Reduce Pollution?

cont'd from page 1

herds using the P-One Program are making great progress in nitrogen and phosphorous reductions. In fact, this discovery has led to discussions of a further university study.

P-One is the Difference

Adjusting protein and carbohydrate levels requires careful planning to maintain the delicate balance necessary to avoid acidosis and other metabolic problems.

"For producers on the P-One Program, Precision Feeding works," notes Nauman.

"Hoober Feeds has been reducing protein content in rations since it became a Priority dealer in 2003, making changes gradually. We've tried making these ration changes in herds that were not using Priority, but we don't have the same success. We just couldn't move the carbs high enough without upsetting the rumen. It reaffirms to us that the P-One Program is doing what it is designed to do."

"In general, we see healthier feet and fewer fresh-cow problems, especially ketosis."

The accompanying chart features some of the Hoober Feeds customers using the P-One Program with a low-protein, high-NFC diet. Higher MNE values indicate better efficiency in converting feed N into milk N. These higher MNE values also indicate that less of the feed N is being excreted into the environment in the manure. Profitability also should improve due to better use of feed dollars.

"These herds demonstrate that cows on a reduced-protein diet supplemented with the P-One Program can achieve high milk production as well as nitrogen efficiency within the university-recommended range," Nauman points out. "Milk components are as good as or better than before adding the P-One Program and changing the diet."

Greater production of microbial protein is one of the reasons these herds are able to perform at high levels on low-protein diets. Microbial protein is the protein in rumen bacteria. Feeding more rumen-available carbohydrates provides more food for rumen bacteria to grow and increase in population. Priority One helps these bacteria grow by preventing pH drops common in high rumen-available carbohydrate diets. The bacteria, which are about 50 percent crude protein themselves, are continually flushed from the rumen and eventually enter the abomasum where they begin digestion by the cow. The amino acids that become available when microbial protein is digested are then absorbed through the small intestine.

Nauman and his associates are also seeing improvements in health and reproduction among P-One herds.

"In general, we see healthier feet and fewer fresh-cow problems, especially ketosis," he reports. "Cows show stronger heats and they are more fertile in the early part of their lactations. The stronger heats are likely due to the increased amount of rumen-available energy (made possible by the ration change and P-One Program), which increases the amount of propionate in the rumen. In turn, this increases glucose amounts that are available for body functions, including milk production and reproduction. Glucose is the fuel for activity."

Hoober Feeds nutritionists Tom Nauman and Jerry Diller

Nauman says Hoober Feeds customers that have changed their herds' diets were skeptical initially that a low-protein diet could work. "But now they are convinced that a combination of dietary changes and the P-One Program can work, and work well. Plus, we're seeing how the Program can help dairy farmers successfully implement the Precision Feeding program to meet the needs of reduced nitrogen and phosphorus contributions to local streams and ultimately the Chesapeake Bay."

**The Chesapeake Bay Foundation foresees this initiative leading to adoption among about 4,000 Pennsylvania dairy farms, and reductions of approximately 24 million pounds of nitrogen pollution and 9.5 million pounds of phosphorus pollution to the Chesapeake Bay.* ■

Most Recent DHIA Data

Herd	# Cows	Test Day Milk	150-Day Milk*	% Fat	% True Protein	Ration CP %	Ration NFC %	Milk Nitrogen Efficiency (MNE)	Feeding Program
A	260	79	84	3.7	3.0	15.4	40.6	31.3	TMR
B	179	87	90	3.4	3.0	15.4	40.7	32.0	TMR
C	50	82	95	3.9	3.2	16.6	38.0	31.6	TMR + Topdress
D	41	87	96	4.0	3.1	15.5	42.5	34.1	TMR + Topdress
E	51	88	94	3.7	3.1	15.9	40.5	33.6	TMR
F	47	90	97	3.8	3.1	16.9	39.3	31.2	TMR + Topdress
G	135	76	83	3.6	3.1	15.4	43.1	31.7	TMR
H	49	86	85	3.5	3.0	16.2	42.0	32.4	TMR + Topdress
I	61	89	92	3.2	3.1	16.2	42.3	32.8	TMR + Topdress

**Expected production/day at 150 days in milk.*

Research *Update*

Ruminal pH Control of Rapidly Fermentable Carbohydrates using the Priority P-One Program™

Feeding higher levels of rapidly fermentable carbohydrates (RFC) or starch will increase milk production, but the increased risk of Subacute Ruminal Acidosis (SARA) makes many nutritionists reluctant to increase RFC in the diet of lactating cows.

Research trials on ruminal pH were conducted on seven commercial dairy herds totaling more than 11,000 cows. The Summary Chart* shows the average pH of 148 cows fed increased RFC while on the Priority P-One Program. The normal ruminal pH indicator of SARA is <5.5 (Oetzel, 2001). The trials utilized oro-ruminal probes. Duffield (2004) showed that the threshold pH when using oro-ruminal probes should be adjusted to pH <5.9 due to higher pH values compared to rumenocentesis.

The P-One Program consists of feeding Priority DCP, Priority One and ration changes. Priority DCP contains ruminal lactic acid utilizing bacteria that colonize (seed) the rumen and convert lactic acid to Volatile Fatty Acids (VFA). Priority One is fed throughout lactation and contains proprietary strains A2020 and A4000H. These bacterial strains convert glucose to lactic acid, which is subsequently converted to VFA by the lactic acid-utilizing bacteria. Together, these insure that rapidly fermentable carbohydrates are utilized properly for optimal energy production.

The studies show that the use of Priority products offers producers and nutritionists ruminal pH control so that higher RFC can be fed without the risk of SARA. ■

This is a summary of the research studies. For a copy of all the papers, please email your name and address to info@priorityiac.com.

***Summary of Seven pH Field Studies**

444 SAMPLES	pH Mean	4 HOURS	7 HOURS	10 HOURS
	6.66	6.69	6.66	6.65

Average pH of seven studies that included 148 cows from Michigan, Texas, Utah, Washington State, Wisconsin, and Mexico sampled at 4, 7 and 10 hours after first feeding.

The normal ruminal pH indicator of SARA is <5.5 (Oetzel, 2001). When using oro-ruminal probes as this study did, it is adjusted 0.4 to <5.9, (Duffield; 2004).

President's *Perspective*

Richard Breunig
Priority President

There had to be a better way.

During the 1980s and 1990s, I was managing one of the nation's best-known dairies. Several of our production records exceeded 40,000 pounds, and we had nine records of over 2,000-pound fat. These are impressive, even by today's standards.

Good times came to a screeching halt when a manufacturer's error in minerals inflicted numerous animal losses. Cows that survived struggled with health issues. The situation was devastating to say the least.

You've heard it said that necessity is the mother of invention? Well, I think it was both the dairy's dire need and my passion for healthy cows that drove me to figure out how to save our remaining animals.

A dairy cow's lifeblood is her digestive system. Proper digestion supports every body organ. And yet, so often today we see Variable Manure Syndrome (VMS) and other health challenges that indicate something is wrong with digestion.

Because the inner workings of digestion have a lot to do with microbes, it made perfect sense to study microbiology. I wanted to find bacteria genetics most capable of completing or performing the digestive tasks it seemed our cows could no longer handle.

That belief led us to where we are today. Priority IAC stabilizes rumen function and feeds the herd in a much different way that's less expensive for you and much healthier for your cows.

Rumen function requires, above all, non-fiber carbohydrates (NFC). We have maximized NFC to 44 percent and higher. Seven pH field studies in two countries verify this. We don't know where the breaking point is. We do know that the more NFC fed the more energy produced. As a result, we're supporting the cow's bodily needs while having her produce the protein—in the form of microbial protein—that is otherwise so expensive to purchase.

Diets in some cases have dropped as much as $1 per head per day, and cow health continues to improve as rumen health improves on the P-One Program.

I often think about my herd at the former Clover Mist Dairy. It turns out those cows gave our industry not only some of its finest genetics, but also a new and better way to feed the herd. ■

95-Pound Tank Average. . .

cont'd from page 1

The Holsteins typically have a tank average of 95 pounds, but lately it's been 107 pounds, the highest it has ever been, due in part to numerous fresh cows.

"Several cows are milking over 200 pounds a day," Duncan shares. "But they are eating well, so even the heavy milkers are not all 'railed out' (rail thin).

"Before the P-One Program, we could see lots of whole corn in many of the piles...now we can't see the corn. The cows are digesting it better."

Feeding the P-One Program has allowed them to lower protein and increase carbohydrates in the ration and has especially paid off in keeping cows on feed.

"We can feed more corn and get away with it," Duncan says. "The cows can handle corn better when they're fed Priority One. Plus, feed intake is more consistent. The cows don't go off feed when it's 90 degrees out, and we've seen a huge improvement in staying on feed after calving. If you can keep them eating, it's a real easy transition for them."

Duncan notes manure is firmer and much more consistent.

"Before the P-One Program, we could see lots of whole corn in many of the piles," he says. "Now we can't see the corn. The cows are digesting it better."

Most cows receive the recommended one ounce of Priority One, but Duncan likes to give the ones in their flush program and cows under tremendous amount of stress (such as high-production stress) a little extra.

Since adding the P-One Program a year ago, Duncan has observed an improvement in production persistency.

"The cows are definitely hanging in there longer," he says. "As an example, we have a cow that freshened in August that was still giving 164 pounds in April."

Noticeable Changes in Health and Reproduction

One of the more significant improvements Duncan says he sees is foot health. Abscesses and especially ulcers had been a real problem, but Duncan reports that during the last four or five of the hoof trimmer's bi-monthly visits, there have been no ulcers.

Ketosis and DAs are down as well.

"At one time, we fought lots of ketosis," Duncan recalls. "They'd get ketosis and then a DA. We've had only two DAs in the last year. Before, we had five or six DAs a year. Our vet bills have come down – even our vets noticed they're not here nearly as often."

Though the vet bill is down, the flushing bill has increased, in part because of an expanded flush program, but also due to more embryos per flush.

"The higher flushing bill is a nice problem to have," Duncan jokes. "We flush three or four animals each month and lately we've been getting 10 to almost 20 embryos, up from 4 or 5 embryos before we started the P-One Program. I think the Program helps by keeping the cows' rumens in tip-top shape, which helps them stay healthy and that helps reproduction. We make sure the recipients are fed P-One, too, because it's important to have good quality recips in a flush program."

Calves Benefit, Too

The Duncans also like Priority Calf GOLD, which, along with a change in milk replacers, has made a "huge difference" in the incidence of diarrhea. After weaning, calves are fed high-moisture corn, distillers grain, and Priority One. The Duncans especially like the results they get with the show calves.

"It really helps them grow," Duncan says. "And at a show, it keeps them eating so they get a good fill for the show ring. With as much beet pulp as they ate at the State Fair last year, we thought for sure the manure would be pretty loose the next day. But it was solid."

From left: Daryl, Neil and Drew Duncan with Cavalier Finley Aspen, EX-90, 4-2 247 days 41,137M 4.5 1862F 3.3 1356P Inc.

As breeders of numerous All-American nominations and bulls sold into A.I. in the U.S. and internationally, the Duncans value the Priority One advantage in their merchandising efforts. But Daryl Duncan believes that commercial operations are where the P-One Program will shine.

Duncan has observed an improvement in production persistency.

"In operations where cows are on concrete, fed a hot TMR (lots of corn silage), milked three or four times a day, hit with bST, and really pushed, they better be prepared to buy lots of replacements – unless they're on the P-One Program," he says.

"I think it's a product a person should seriously look at," he continues. "Talk to people using it, look at farms using it, ask them why. When we noticed some high-profile herds using it, we thought, 'If they're feeding it, they're feeding it for a reason.' Now that we've been on it for a year, I know without a doubt it's making me money." ■