

FARM REPORT



In This Issue:

Food for Thought; VT Feed Dealers Meeting	2
Planning Ahead; Nobody Asked My Opinion...	3
What's Happening on the Farm: At the Fair	4
Hunting for an Agronomist	5
Crash Course in Animal Nutrition	6
Shipping Silage Samples for Yeast and Mold Analysis	7



Visit our blog:
minermatters.com

 Like us on
Facebook
facebook.com/WhMinerInstitute

FROM THE PRESIDENT'S DESK: A TALE OF TWO FIBERS

Recently we've been focused on the relationship between undigested and physically effective NDF (abbreviated as uNDF and peNDF). The potential interactions between peNDF and uNDF measured at 240 hours of fermentation (uNDF240) is a hot topic among nutritionists and leads to several important, practical feeding questions:

- 1) What is the effect of peNDF and uNDF240 in diets fed to lactating cows?
- 2) Are there optimal peNDF concentrations as uNDF240 varies in the diet?
- 3) Can we adjust for a lack of peNDF by adding more uNDF240 in the diet? and
- 4) If forage uNDF240 is higher than desired, can we at least partially compensate by chopping the forage finer?

Some have even wondered how important particle size actually is as we better understand fiber digestion fractions (i.e., fast, slow, and uNDF240) and their rates of digestion. This is a question that can be answered in another article, but the short answer is – yes – particle size is important, though maybe for reasons we haven't always appreciated such as its effect on eating time even more so than rumination.

We recently finished a study in collaboration with Zennoh – a large Japanese agricultural cooperative with whom we've collaborated for many

years – where we assessed the effect of feeding lower (8.9% of ration DM) and higher (11.5% of ration DM) uNDF240 in diets with either low or high peNDF. The diets contained approximately 35% corn silage, 1.6% chopped wheat straw, and chopped timothy hay with either a lower physical effectiveness factor (fraction of particles ≥ 1.18 -mm screen; 0.24) or a higher pef (0.58). We used a Haybuster with its hammer mill chopping to achieve the two particle sizes of dry hay. The lower uNDF240 diets contained about 47% forage and the higher uNDF240 diets contained about 60% forage on a dry basis.

The “bookend” diets that contained the extremes in either uNDF240 or peNDF (i.e., low uNDF240 and peNDF versus high uNDF240 and peNDF) consistently and predictably differed in DMI, milk yield and composition, and chewing behavior. Of greatest interest, the two intermediate diets that contained either low uNDF240 and high peNDF or high uNDF240 and low peNDF resulted in similar DMI, energy-corrected milk, and ruminal pH and VFA concentrations.

Here's the take-home: The calculated “physically effective uNDF240” (pef x uNDF240) was virtually the same for both of these intermediate diets

See **FIBER**, Page 5

FOOD FOR THOUGHT

Summer is when family and friends descend on the Thomas “estate” in Oak Point. We’ve learned that owning a large home and a guest house on the N.Y. shore of the St. Lawrence River means that we don’t have to go visiting; folks come to visit us. Summer also involves family dinners, often 15 or more from several families, with each providing some of the food. Fortunately, our three kids (they’re still “kids” to us) and/or their spouses are good cooks, fond of trying new recipes. Some food for thought:

- When our guests leave we inherit the food they can’t or don’t want to haul home with them, mostly refrigerated items. Therefore, lurking in the back of our fridge after the 4th of July week was a bottle of almond milk. Now I’m fully supportive of the dairy industry, and The Bride and I
- drink plenty of milk. But I’m also curious, and a bit...ah...frugal (for lack of a better word), so instead of pouring it down the drain I tried a glass of the (non-dairy) almond beverage. My evaluation: Meh, so down the drain it went. What is “special” is the price: \$3.48 for 48 ounces at the local Walmart, or 7.3 cents per ounce. For comparison, we bought a half gallon of 2% milk at Aldi’s last week for \$1.06, or 1.6 cents per ounce. ‘Nuff said.
- In my opinion, for most recipes involving fresh garlic there’s no such thing as “too much” garlic. This does not include garlic ice cream, a purported delicacy served at the Gilroy Garlic Festival in Gilroy, California, the self-named “Garlic capital of the world.” Been there, didn’t try the ice cream. Nor the garlic-flavored beer.
- Tolerance for spicy foods differs considerably: The Bride doesn’t like anything with more than a hint of spice, I like hot wings but not the tonsil-scorching ones, while #2 son Matt and his wife can eat Jalapeno peppers with impunity and sometimes cook with peppers so hot that the degree of heat is expressed via the Scoville Heat Unit scale. This includes the Scotch bonnet pepper, which is four times hotter than habaneros and 250 times hotter than Jalapenos.
- Whoever decided to serve bean soup at lunch two days in a row at an agricultural conference, when the next several hours would be spent in a large meeting room, must have had a poor understanding of the human digestive process.

— E.T.

VT FEED DEALERS & MANUFACTURERS ASSOCIATION ANNUAL MEETING Sept. 12-13, 2018 Killington, VT

The Vermont Feed Dealers and Manufacturers Association has been in existence for 76 years providing a service to the agriculture industry in Vermont. Not only do the members of this organization service the agriculture community by providing feed, seed, fertilizer and supplies, but as members of this organization we strive to be a voice in support of this vital industry.

Our theme for 2018 is "Win-Win Ag Practices That Benefit Both Farmers and Society". We will have speakers from the University of Vermont talking about the research that has been done and continues to be done to help reduce the environmental impact on the land and water. Jeff Carter, Dr. Heather Darby and others along with a panel of young farmers will be our featured speakers.

Learn more and register at www.vtfeed.com.

PLANNING AHEAD

You can't control the weather, but you can influence its impact on your field crops. Four items to ponder in the coming weeks:

1. Now is a good time to evaluate the status of your corn crop, particularly that intended for silage harvest, which is at least half of the corn planted in the Northeastern U.S. "Silk to silage in 6 to 7 weeks" means that for your corn to be at the proper maturity for silage by the end of September it should be silking by mid-August. Unusually warm or cool conditions from mid-August on will have some impact on maturity but probably won't make a big difference. If your crop isn't close to silking by mid-August you'd better hope for warm weather and a later-than-normal frost. Long-term weather trends are in our favor, but don't expect miracles.
2. Take a critical look at your alfalfa and alfalfa-grass fields to determine which are good enough to remain productive for another year. You have more flexibility with alfalfa-grass since you can apply N fertilizer or manure to increase yield. The guidelines normally used for clear alfalfa — at least 6 plants per square foot — don't apply to alfalfa-grass. I've seen stands of alfalfa-grass that are very productive with 3-4 alfalfa plants/square foot. More stems per plant can compensate for fewer alfalfa plants. If alfalfa comprises less than half the yield in an alfalfa-grass field you should fertilize it as if it were all grass, which means N fertilizer or manure at green-up next spring and right after all but the final harvest. Nitrogen, as fertilizer or in manure, does not hurt alfalfa as long as it's applied within a few days after harvest.
3. If you planted a reduced-lignin alfalfa variety make sure you get a forage analysis of the freshly harvested forage and put it where you can find it when you're ready to start feeding it. Dumping it into a big bunker silo with your conventional alfalfa defeats the whole purpose of planting high-quality varieties. Manage inventories of reduced-lignin alfalfa similar to proper management of BMR corn silage: Know how much you have and where it's stored so that you can feed it for maximum milk response — usually to fresh and high group cows.
4. There's no reason to postpone your purchases of potash fertilizer since prices aren't likely to hit a late summer slump this year, more likely to drift higher into fall. For fertilizer to protect alfalfa plants it needs to be applied early enough to be taken up by the root system. This means soon after your final harvest unless that was after a killing frost.

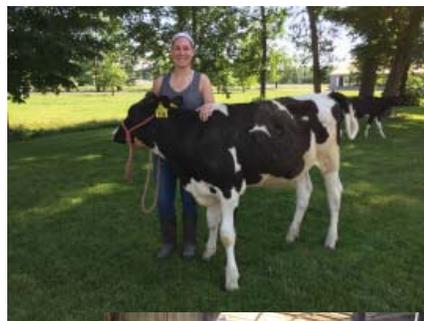
— Ev Thomas
ethomas@oakpointny.com

NOBODY ASKED MY OPINION, BUT...

- ...agriculture doesn't get nearly the credit it deserves in improving household finances. Since 1972 spending on food and clothing by the average U.S. family has decreased from 27% of the total to 16%, while the share spent on housing and health care has changed little. This means more money available to buy a bigger home, a second car, or hauling your kid to the orthodontist.
- ...since we know that corn silage doesn't reach peak yield and milk production potential until it's close to 35% DM, and that 30% DM is not the "gold standard" for corn silage maturity, WHY do some agribusinesses (most recently a large seed company in its July newsletter) continue to state corn silage yields at 30% DM? Why reinforce misinformation? The Crops Dude is not pleased.
- ...who will anti-GMO activists love to hate now that Bayer has announced that it won't retain the Monsanto name following its purchase of the company? "Monsatan" used to be a pejorative used by those opposed to genetic engineering. They'll now have to find some other ox to gore...so to speak. And it's a safe bet that they will.
- ...living on or even near a dairy farm has health benefits. Dutch scientists have discovered that living on or near a livestock farm reduces the incidence of allergies in both children and adults. People living within 1000 feet were 21% less likely to have allergy symptoms compared to those living more than 1600 feet away. Many studies have shown that allergies are less prevalent in farm families, but now it appears that you don't have to live on a farm to benefit. Dairy farmers say "You're welcome!"

— E.T.

WHAT'S HAPPENING ON THE FARM: AT THE CLINTON COUNTY FAIR



Highlights from our registered Holstein cattle shown by students and staff at the Clinton County Fair include 1st Place Fall Yearling, 3rd Place Junior Best 3 Females, 2nd Place Senior 2-year-old, 1st Place Junior 3-year-old, 1st Place Senior Best 3 Females following the honorary entry from Maplegrand Farm, and 2nd Place Exhibitor's Herd.



80th ANNUAL CORNELL NUTRITION CONFERENCE

October 16-18, 2018

Doubletree Hotel Syracuse

6301 State Route 298, East Syracuse, New York 13057

The annual Cornell Nutrition Conference is designed to provide industry leading research and information to feed industry professionals and nutritional consultants. Emerging topics across the spectrum of animal nutrition are presented by industry leading academics and researchers.

The 2018 event will begin with a pre-conference symposium sponsored by Diamond V, entitled "Leading the Way in Responsible and Sustainable Food Production" The main conference program will feature a mini-symposium honoring Dr. Ron Butler's contributions to the field of animal source. Breakfast presentations sponsored by Alltech and Arm and Hammer Animal Nutrition start the day on Wednesday and Thursday. The conference will conclude with a post-

conference symposium sponsored by AB Vista, "Unlocking the Energy Potential of Fiber."

On line registration is available at:

<https://www.cvent.com/events/2018-cornell-nutrition-conference/registration-b859247a1bea45dfbc207158fce5e689.aspx?fqp=true>

For Conference information contact:

Heather Darrow, Conference Coordinator

272 Morrison Hall

Ithaca, NY 14853

Email: hh96@cornell.edu

Phone: (607) 255-4478

HUNTING FOR AN AGRONOMIST

Many of our readers have already heard that Eric Young has left for a new position with the USDA Agricultural Research Service in Marshfield, WI. He will focus on nutrient management research and working with the USDA team of scientists located there and in Madison. We are sad to see Eric leave since he has been doing such great work at the Institute, but we wish him well – and we are actively searching for a replacement.

This agronomist position is a key component of our research and education programs here at the Institute and we are anxious to find a new person as soon as we possibly can.

We are looking for someone who can lead a research and outreach program focused on nutrient management in dairy-forage systems. They will need to work as part of our larger research team focused on the crop-animal-environment system. The person in this position will interact with producers, farm staff, agribusiness, agronomists, researchers, and relevant agencies to conduct an effective applied research and outreach program. Research in-progress includes paired edge-of-field runoff water quality sites with year-round tile drainage and surface runoff monitoring – and we would expect the new person to keep these sites going as well as adding in their own research interests.

We also expect the person to provide science-based presentations to various stakeholders and agricultural groups; mentor graduate students; and work with Institute staff to offer undergraduate education in nutrient management and crop production.

The qualifications for this position include: 1) Ph.D. in agronomy, soil science, environmental science, or agricultural engineering required (or related discipline); 2) experience with agronomic and nutrient management practices (corn silage/hay crop production, tile drainage, and manure management) typical of the northeastern US; 3) knowledge of dairy farm and field crop operations and a working knowledge of concentrated animal feeding operation regulations in New York; and 4) knowledge of agronomic and soil conservation practices and familiarity with land grant university nutrient management guidelines.

We are accepting applications right now and will continue to do so until September or until we hire a suitable person. If you know of anyone who might be a good fit, please have them send a cover letter, CV, and names and contacts for three references to:

Rick Grant
President
William H. Miner Agricultural Research Institute
Chazy, NY 12921
Phone: 518-846-7121 x116
Email: grant@whminer.com

FIBER, Continued from Page 1

(5.9% of ration DM). Our goal is not to coin yet another nutritional acronym, but to focus on a highly useful concept. We were able to elicit the same response by the cow whether we had lower uNDF240 in the diet chopped more coarsely, or whether we had higher uNDF240, but chopped more finely.

If future research confirms this

response, then it suggests that when forage fiber digestibility is lower than desired (think of a cutting that got away from you because of weather), then a finer forage chop length will boost feed intake and lactational response.

As Charles Dickens wrote in his classic novel Tale of Two Cities “It was the best of times, it was the

worst of times...” When it comes to these two measures of fiber, it looks like we can have the best of times when we are able to integrate both uNDF240 and peNDF when formulating rations. Stay tuned as we report on more of this research in the coming months.

— Rick Grant
grant@whminer.com

CRASH COURSE IN ANIMAL NUTRITION

While many factors influence the health and productivity of farm animals, perhaps the most important of these is nutrition. I am entering my senior year as a Livestock Science major, and the subject which most peaks my interest is nutrition. Between my coursework and my experiences, including this summer at the Miner Institute, maybe I've turned a little biased but with good reason. Whether you're raising dairy cattle, beef cattle, layers or broilers, swine, etc., providing a properly formulated ration for your livestock is key. If you have experience in the field of dairy nutrition perhaps it's best that you skip or skim this section, as I'm sure you are aware of the concepts to follow. However, if you're curious about the basics, then this one is for you!

There are six classes of essential nutrients, each serving a specific function to the body. These include water, carbohydrates, proteins, fats, vitamins, and minerals. Water accounts for 60-70% of a livestock animal's body. Water is the body's main transport system and is required in the composition and release of bodily fluids such as blood and urine. In digestion, water is required to absorb and metabolize other essential nutrients as they pass through the body after a consumption of feed occurs. Water intake and loss is dependent upon an animal's production level. Walking, weather and environment, feed offered, and milk output are examples. Providing a clean and plentiful source of water should always be a priority.

Carbohydrates provide the body with a short-term energy source. Carbohydrate sources typically equal 50-75% of an animal's feed ration. They are composed of sugars, starches, cellulose and hemicellulose which are all components of plant cell(s) and tissue. There are two categories of carbohydrates: Structural carbohydrates, come from fiber sources and are found in the cell wall of a plant. Non-structural carbohydrates, or starches,

are found within the cells themselves and are more digestible. Carbohydrates are necessary to maintain a healthy population of rumen microorganisms by providing fiber and energy to them. A majority of carb intake comes from feedstuffs such as corn and soybeans. Silages are a source of starches and fiber as well.

Protein is a necessity for cell and tissue repair in the body. The degradation of protein allows its components to be digested by the cow and broken down into amino acids. The amino acids are either utilized by rumen microbes or passed through the rumen to be absorbed through the wall of the small intestine. After absorption, amino acids are distributed throughout the body and used for growth and function of bone and muscle. Amino acids also have the ability to act as a precursor to enzymes. In a dairy cow, amino acids are utilized in milk protein synthesis and the animal's overall energy production. Soybean meal, canola meal, distiller's grains, and high-quality grass and alfalfa hay are common protein sources. Rumen microbes themselves can also become an excellent source of protein after they die and are digested by the cow.

Fats provide a stored energy source and are particularly important in dairy cow rations. Body condition score in close-up cows through the beginning of a new lactation cycle can easily decrease by the energy demands of lactation. The stored energy or fat in the body is utilized during negative energy conditions to maintain body weight and condition. By maintaining proper fat and energy content in a ration, the duration of a negative energy balance can be minimized. Cows that lose body condition score during this timeframe often have a hard time gaining back their previous body condition and can develop health problems such as ketosis or fatty liver disease. During periods of positive energy balance, properly processed soybeans are an excellent source of fat in a ration. Other feedstuffs such as cottonseed or tallow

are common fat sources. In addition to these, the rumen microbes produce volatile fatty acids that can be used as an energy source or be stored in the body.

A proper vitamin-mineral balance in a diet is required to encourage necessary biochemical reactions in the body such as digestion and metabolism, muscle contractions, and reproductive function. Vitamins and minerals are often provided in the diet in various forms and combinations. Key ones include Vitamins A, D, and E, as well as minerals such as selenium, iodine, sodium, calcium, phosphorus, magnesium, and iron. Calcium and phosphorus are fed in ratio to one another and are components of teeth, bone, and milk, emphasizing their importance. Vitamins A, D, and E are necessary for bone growth, vision, healthy skin, healthy and adequate organ and body cavity linings, and muscle strength. Selenium works together with Vitamin E, iodine assists in metabolism rates, sodium and sodium chloride helps maintain acidity levels in body fluids, and iron supplementation prevents anemia and is required to carry oxygen throughout the bloodstream.

Frequent sampling of ration components provides nutritionists with valuable information that can be used to ensure that farmers are able to take advantage of the nutrients provided by homegrown feedstuffs, minimizing purchased feed costs. A balanced ration encourages increased milk quality and production, promotes reproductive performance, and reduces postpartum complications. A dairy farm's overall prosperity can be linked to proper nutrition for all stages of animals, from a newborn calf consuming its first colostrum to a cow in her 7th lactation.

— Jazmin Markey
Miner Institute Summer Experience in
Agricultural Research Intern
Delaware Valley University
markeyja8835@delval.edu

SHIPPING SILAGE SAMPLES FOR YEAST AND MOLD ANALYSIS

It's good to recycle, and this occasionally includes information previously appearing in the Farm Report. Back in the "aughts" we did a neat little project aimed at answering the following question: When submitting silage samples to a forage lab for yeast and mold analysis, should you use paper or plastic sample bags? We asked the question because some forage labs were recommending that samples be packaged in paper bags, but we couldn't find research either supporting or contradicting this recommendation. And the fact is that almost all samples are submitted to forage labs in plastic bags containing about a quart of material.

Sooo, we decided to do a simple trial to answer this question. Actually, Ev decided that Miner Institute should do the research, to the usual amount of good-natured complaining from Katie Ballard since he was famous (infamous) for what she termed "unfunded research projects" that often were just slightly more

involved (and costlier) than he estimated. (The "just slightly more" is a matter of opinion.) This time Katie developed the research protocols (oh, ye of little faith), and we were able to get partial funding from Lallemand Nutrition. We stored silage samples for 48 hours in both paper and plastic bags under four simulated shipping conditions, at temperatures ranging from minus 4°F to 95°F. After 48 hours all samples were analyzed for dry matter %, pH and the change in mold count from the original sample.

What we learned:

- Silage stored in plastic bags had a smaller change in mold count than those stored in paper bags, with those stored at room temperature changing the least.
- Storage conditions had little impact on changes in sample pH, in all cases less than 0.1.
- Samples stored in paper bags dried considerably (even at -4°F), while those stored in plastic bags changed by 1% or

less.

- The mold count of samples stored at -4°F decreased considerably. Don't freeze samples to be submitted for mold and yeast analysis since this can mask a potential problem.

To attain lab results that most closely represent the forages on the farm, samples analyzed for mold/yeast analysis should be shipped to the analytical lab in a plastic bag, with coolant pack to reduce heating of the forage. However, we found dramatic differences even under the optimum conditions used in this study, which questions the accuracy and therefore the usefulness of general mold/yeast counts after shipping silage samples to commercial laboratories.

Visual assessment of silages on-farm may be the best indicator for estimating their general mold/yeast status.

— Ev Thomas
ethomas@oakpointny.com



Farmer-Driven Research • Real-World Results

www.nnyagdev.org

NNY research results/reports/news for farmers
in Clinton, Essex, Franklin, Jefferson, Lewis
& St. Lawrence Counties

**Practical Applications for
Dairy • Field Crops • Horticulture • Maple & More**

To request updates by text or email: contact 315-465-7578

NNYADP funding is supported by the New York State Senate and administered by NYS Dept. of Agriculture & Markets

The William H. Miner Agricultural Research Institute
1034 Miner Farm Road
P.O. Box 90
Chazy, NY 12921



Non-Profit
Organization
U.S. POSTAGE PAID
Chazy N.Y. 12921
Permit No. 8

Change Service Requested



**YOUR AUGUST
FARM REPORT IS HERE
ENJOY!**

A special World War I exhibit was showcased at the July 14 Centennial Summer Fair.

Closing Comment

A recent study has found that women who carry a little extra weight live longer than the men who mention it.

www.whminer.org

518.846.7121 Office
518.846.8445 Fax