FARM REPORT

In This Issue:

Alumni Corner: Nutrition & Feed Management	2
Are Your Dry Cows Getting Enough Protein?	3
The Value of a Herd Mating Program	4
What's Happening on the Farm	5
Much About Phosphorus: Soil Research Update	6
Thoughts & Experience With Low Forage Rations	7
Corn Silage Processing: An Economic Analysis	8
The Big Seven-0 Putting Lipstick on a Pig	9
Food For Thought	10
Dairy Industry Development in China	11

CROP CONGRESS REMINDER!!

Wednesday, Feb. 13 at Miner Institute

Visit whminer.org or contact Eric Young at 518-846-7121, ext. 113 for more info.

FROM THE PRESIDENT'S DESK — THE GRASS IS GREENER

I spent the second week of January in wintry Wisconsin as part of a series of programs focused on feeding higher forage diets. Observing the obvious enthusiasm of the attendees and hearing their questions – how to best raise high quality forages, how to increase tonnage with double or triple cropping systems, how to optimize the cow's response to high-forage diets – I was struck by what a "teachable moment" we have right now for learning how to successfully feed more forage.

I started each presentation with the simple question: "What is a high-forage diet?" At each site the consensus seemed to be at least 70% forage. At one site a producer even pointed out that feeding high corn silage diets, though increasingly common, is not really feeding high-forage because of the grain content of the silage. His point engendered discussion about what forage mixture we can realistically expect to feed to our high producing cows. A 70% forage diet containing corn silage is a misnomer compared with a diet based on some mixture of grass and legumes. We quickly focus on fiber and fiber digestibility when discussing high-forage diets, but we must remember that over 60% of the digestible nutrients from typical corn silages come from nonfiber components of the crop.

A fundamental question as we seek to formulate ever higher forage diets is: "How much forage or forage-NDF can a dairy cow actually consume?" The traditional guideline has been about 0.9% of body weight as NDF, but we know that cows can consume much more than this amount of fiber when provided with highly digestible forages. Pastured cattle consume 1.8% of body weight (i.e. 2x the benchmarked amount) as forage NDF. With typical Northeastern U.S. diets of corn silage and haycrop silage we've routinely measured total NDF intake in excess of 1.5% of bodyweight for cows producing over 100 lb/day of milk. Increasingly we read of case-study herds that are able to feed 70 or 80% forage diets and still maintain 80+ lb/day of milk. Clearly, we have only scratched the surface of how much forage even a high-producing cow can consume.

See FORAGE, Page 4

Alumni Corner

Nutrition & Feed Management to Succeed in a Volatile Dairy Market

Volatility is a new buzz word in the dairy industry. A dramatic increase in U.S. dairy exports and a new norm of high feed prices has increased volatility of the dairy industry in recent years. For example, in 1996 only about 3% of the total milk solids produced in the U.S. were exported compared with 10-13% of dairy exports in the last five years. Therefore, the global economy now has a greater impact on domestic dairy prices. In addition, feed prices are higher than ever. Two of the primary drivers of the high feed prices: 40% of corn produced in the U.S. is now used for fuel ethanol production; and a record drought for much of the U.S. during the 2012 growing season. Managing your dairy in a volatile market is a multipronged approach. Small improvements in many areas of your operation, including nutrition and feed management, may be beneficial. Increasing income over feed costs via opportunity costing, better feed management, and improved feed efficiency may help you remain profitable during the highs and lows of the volatile market.

Opportunity Costing. Consider utilizing programs like Sesame III (Code Star Software LLC, Dublin, OH), which provides price comparisons for feeds based on digestible or metabolizable nutrients for dairy cows specifically. The program classifies feeds into 3 categories: under-priced, neutrally-priced, and over-priced. Optimal use of feeds that are under-priced will help with capturing margin on the dairy farm.

Feed Management. Other than selling feed, there are two ways feed is generally removed from the dairy: 1) It is consumed by cattle and converted into milk, body tissue (including fetal tissue), and manure or 2) It flies away in the form of dust and starlings. Clearly, reducing the amount of feed removed via the second option will improve income over feed costs. There is a capital investment with on-farm feed management, but with high feed prices it's a good time to reevaluate the value of improved commodity bays, bins, or concrete pads in reducing shrink on farm. In addition, improved capacity to store commodities on farm will give your nutritionist more flexibility to balance rations for different lactation groups, which may improve feed efficiency.

Feed Efficiency. With current feed prices, increasing energy-corrected milk output per pound of dry matter consumed is a relatively easy way to capture more margin on the dairy farm. However, in order to manage volatility through improved feed efficiency, you have to measure it, which means monitoring DMI daily. Investment in feed management software programs may be worthwhile depending on the size of your operation.

Conclusions. Increased volatility in the dairy industry is of concern to dairy producers and their nutritionists alike. Staying focused on maximizing margins during all phases of the market will allow you to adapt quickly and remain profitable through the volatility. Buying feeds based on their nutritive value, improving feed management, and maximizing feed efficiency are all ways that you can manage through the volatility with your nutritionist. Keep in mind that there is opportunity in this volatility. The global population is growing, resulting in an increased demand for food outside of the U.S. borders.

— Sarah Schuling

* I was known as Sarah Boucher when I was a post-doctoral research associate at Miner Institute from Sept. 2008 to June 2010. I am newly married and currently employed as Dairy R&D nutritionist with Hubbard Feeds, Inc. I am based out of my home office in Des Moines, IA and travel through all of Hubbard territory.

ARE YOUR DRY COWS GETTING ENOUGH METABOLIZABLE PROTEIN?

Nutrition and management during the dry period are critical factors for the metabolic status and lactation performance of the dam and health of calves. In particular, the notion that protein nutrition of the dry cow influences lactation performance and health is widespread. Many studies have focused on crude protein needs of dry cows but the results have been mixed, with several studies finding little response in milk yield, milk protein content, or milk protein yield (Bell et al., 2000). Part of the inconsistency in results is because of the poor relationship between crude protein intake and metabolizable protein supply in dry cows. The relationship is dependent on the quality and quantity of dietary protein and the availability of fermentable carbohydrates for microbial growth in the rumen. Improvements in models for diet formulation (i.e. CPM Dairy and CNCPS) have made it possible to estimate metabolizable protein supply and needs of dry cows. Although models provide estimates of metabolizable protein and amino acid supply, the use of crude protein for diet formulation is still prevalent. Currently, formulating diets for dry cows in regards to metabolizable protein and amino acids in an area of opportunity.

Recommendations for metabolizable protein for mature dry cows are typically in the 1000 to 1200 g/d range (Block, 2010; Drackley, 2008). Diets that are lower in fermentable carbohydrates, in particular starch, may need to be supplemented with rumen undergradable protein (e.g. protected soy products) to provide the appropriate amount of metabolizable protein and the proper amino acid profile. French (2012) conducted a literature review of published studies with dry cows and protein nutrition and generated a database. The database contained 12 published studies, 30 treatments, and 382 animals. Descriptions of rations and cows were modeled in CNCPS to generate metabolizable protein values. Metabolizable protein fed in the close-up period was positively related to milk protein yield in early lactation as long as cows were fed >75% of their metabolizable protein requirement in early lactation. Based on the database, French suggested the following guidelines for feeding close-up cows: 1300 g/d of metabolizable protein, 30 g/d of metabolizable protein-methionine, and 90 g/d of metabolizable protein-lysine.

Protein mobilization is a concern for both dry and early lactation cows. If dry cows are deficient in metabolizable protein they will breakdown muscle and other protein sources in the body. Early lactation cows have an inability to consume sufficient protein to meet the mammary and non-mammary amino acid requirements. Cornell researchers (Bell et al., 2000; Burhans and Bell, 1998) calculated the metabolizable protein balance of 80 Holstein cows during the first 28 days postpartum and found that the nadir was -600 g/day at 7 days postpartum. Cows returned to positive protein balance during week 3 postpartum. Bell et al. (2000) suggested that during the first 7 to 10 days postpartum, high producing cows may need to mobilize up to 1000 g of tissue protein per day to satisfy the mammary gland's demand for amino acids and glucose.

Mobilization of labile protein reserves before calving reduces the amount available after calving. In a recent study (van der Drift et al., 2012) a large variation was observed among cows in the onset and duration of protein and energy mobilization during the transition period. Based on plasma 3-methylhistidine concentrations and muscle thickness profiles, protein mobilization started before calving and continued until week 4 of lactation. Interestingly, protein mobilization occurred before lipid mobilization in most cows. The authors speculated that it might be due to a prepartum amino acid deficiency in the absences of negative energy balance. In addition, it appears that the timing of protein mobilization is related to hyperketonemia (high ketones). Cows with lower 3-methlyhistidine concentrations (indicating less muscle breakdown) had higher serum β-hydroxybutyrate concentrations. Greater protein mobilization to a certain extent after calving may provide amino acids for gluconeogenesis (glucose production) and limit ketone body production. However, this hypothesis needs to be confirmed with additional research.

— Heather Dann
dann@whminer.com

* References available on request.

Is there something you would like to know more about?

Send *Farm Report* article suggestions to Rachel at dutil@whminer.com

THE VALUE OF A HERD MATING PROGRAM

"I'm glad we don't have a corrective mating program for people" once stated a veteran of the AI industry. A tall, lanky fellow who felt… well you can guess where this is going. Today, herd mating programs are more than a corrective type mating program.

There are several reasons why a dairy producer may decide to utilize a herd mating program. As the dairy industry has striven to select the best genetics possible, the cattle population has become more closely related. For every 1% increase in inbreeding, milk production drops 790# milk, 25# protein lifetime, +.36 days of age at first calving, +.26 month first calving interval and -13 days productive life (Cassell, VPI). With inbreeding levels approaching 6% or higher in the Holstein and Jersey breeds, it makes real economic sense to limit the inbreeding levels within a herd yet strive to maximize genetic gain.

As DNA technology has developed to further identify the best genetics available, it has also uncovered new undesirable recessive genes within the cattle population. You want to use the best sires for your herd, but may be avoiding some elite sires because they are a carrier of a recessive gene that may be of low economic importance. Many herd mating programs will allow the use of these sires by avoiding carrier to carrier matings.

Corrective mating your herd has proven to increase the lifespan of your cows. Positive type traits correlate to the longer life of a cow and an improved bottom line. According to herd life research conducted by Holstein Association USA, Inc. every +1.0 STA (Standard Transmitting Ability) increase in Foot and Leg Composite results in 9 more days of productive life. Udder Composite proves to be even more influential as every +1.0 STA increase yields 18 more days of productive life. For example, if your herd average is 25,000# milk and the milk price is $18 cwt, every +1.0 change in Foot and Leg Composite is equal to $133 increase per cow per year. For Udder Composite, this amounts to $266 per cow per year. In today's economic environment, this amounts to a significant savings!

Not all dairy producers have the same goals in mind for their herd. Whether your goal is to maximize profitability, produce elite seed stock or exhibit cattle at a show, mating programs generally allow producers to select the right sires to meet their herd goals. To maximize gains it's important to define your herd goals, develop a plan and then stick with it. Minor adjustments along the way allow for changes within the industry.

In addition, a mating program can be a labor and time saving addition for a dairy producer. Instead of spending extra time trying to decide what sire to breed a particular cow to, mating programs can provide an easy to follow guide for producers with busy schedules.

So why consider a mating program for your herd?

1. Inbreeding management.
2. Recessive gene management.
3. Added herd longevity.
4. Selection of the "right sires" to meet your herd goals.
5. Added labor and time savings for busy dairy producers.

— Jerry L. Emerich
Dairy Coordinator
Select Sire Power, Inc.

FORAGE, Continued from Page 1

At these series of meetings producers learned about some of the best forage genetics currently available for grasses, legumes, corn hybrids, sorghums, and other forages that work well with multiple cropping systems to improve forage yield per acre. As we ponder the latest forage genetics we need to bear in mind the fundamental importance of crop genetics versus stage of maturity at harvest. In 2007 Dr. Dave Mertens at the U.S. Dairy Forage Research Center in Madison, WI summarized the published research on fiber digestion kinetics of grasses and legumes. He found that lignin content was 35% less for grasses, and NDF digestibility was 34% greater, compared with legumes. However, when the same data base was used to evaluate immature versus mature forages, averaged over both grasses and legumes, he observed that lignin content was 59% less for forages harvested at an immature stage, and NDF digestibility was 53% greater compared with forages harvested at more mature stages of maturity. What is the take-home message? Forage quality at harvest is more important than the specific type of forage planted. This does not imply that the choice of what to plant is unimportant, but we need to sharpen our focus on harvest management so that the potential feeding value of our forages is not squandered. In the absence of high quality forage, a high-forage diet is merely a recipe for limiting feed intake and milk production. And the bulls-eye of the quality target is easy to miss: Researchers at Cornell University have found that NDF digestibility decreases by 0.5 to 1.0 unit/day for alfalfa with an even steeper decline for grass.

So as we strive for higher forage diets it helps to plant advanced crop genetics with greater potential for fiber digestibility, but we cannot ignore the importance of harvesting at the correct stage of maturity. And I didn't even talk about the feeding environment and bunk space!

— Rick Grant
grant@whminer.com

WHAT'S HAPPENING ON THE FARM

We finished 2012 with some good management stats for the farm - a 30,000 lb herd average, a 5% DOA rate, a SCC below 200,000 for the last three months, and a 150-day pregnancy rate that showed improvement in the last half of the year. This is in the midst of numerous research projects with pen moves and diet changes. Behind the performance of the herd this past year is a strong, dedicated team of employees working together for a healthy, productive dairy herd where research, education, and demonstration can take place.

Improving communication has been a focus at the Institute over the last couple years. Not that we were miserably failing at it, but there is always room for improvement. As our education and research programs have expanded and our herd size has increased, communication between and within departments at the Institute has become increasingly important. We have all attended several communication workshops put on by independent human resource professionals covering topics ranging from general communication skills to conflict resolution to supervisory skills. We've been to plenty of seminars on nutrition, bio-security, milking procedure, calf-raising, etc., but this was the first time we focused on communication with one another in a formal manner.

Two of the things to come up during these workshops were: 1) The way we view conflict and 2) The importance of honesty with one another. Conflict shouldn't always be viewed in a negative light – addressed appropriately it can be a great opportunity for growth and improvement for both parties. While speaking honestly with co-workers is uncomfortable at times, when honesty is accompanied by some grace, it really improves relationships. Better to speak up and be honest with someone rather than keep it inside on a slow simmer until the "pot boils over" as it were. Sometimes it is best just to shrug off little irritations and keep going, but sometimes real conflict is not dealt with because we are worried about the person's response when we bring up the issue. On the flip side, maybe we don't always take constructive criticism well when someone comes to us. How can we ever work together as a team and move toward our goals if we aren't honest with one another, addressing the conflicts that arise, and helping one another reach their full potential?

For the most part our farm team tends to be pretty honest with one another – some more than others. This year we took it to a new level when four of the farm staff, with supervisory roles, wrote a review of each other that Steve Couture complied for each one and used in his year-end review. Below are the two questions we answered:

1. What I most appreciate about (employee X) is… (list 2-3 things)

2. If (employee X) could get better at the following it would enhance his/her performance/the performance of the team/the performance of the Institute …..(list 2-3 things)

It wasn't an opportunity to slam one another anonymously or to complain about the things that irritate us. It was designed to help each other improve in our job performance, and I think it was a pretty successful project.

What does all this communication and honesty stuff have to do with the cows – everything!! Because sometimes the hardest part of the day isn't taking care of the animals, but working with people. And how well we work together helps to determine how successful our farm will be in 2013.

— Anna Pape
pape@whminer.com

HONEY BEE MORTALITY & SEED CORN TREATMENTS: AN UPDATE

A year ago there was concern, with considerable coverage in the agricultural press, that the active ingredients in the newer seed corn treatments (such as Poncho and Cruiser Extreme) were related to honey bee mortalities. The insecticides in these treatments are highly toxic to bees; however, as most of us know, "The rate makes the poison." Research in North America and Europe as well as over two dozen field studies with these products at the labeled use rates have found nothing linking them with honey bee colony decline. This appears to contradict earlier information, but we've been through this situation before with the impact of Bt corn pollen on monarch butterfly larvae. That issue made headlines until cooler heads prevailed and it was determined that corn doesn't shed pollen at the time monarch butterfly larvae are foraging on milkweed plants.

MUCH ADO ABOUT PHOSPHORUS: SOIL RESEARCH UPDATE

Phosphorus (P) management is an important aspect of any nutrient management plan. On a dairy farm, P is critical for profitable crop production and optimal animal performance. Utilizing Land Grant university soil testing and animal nutrition guidelines is the first step toward improving whole farm P efficiency. Balancing P imports and exports on the farm is also an important consideration to maximize economic returns and minimize the risk of excessive soil P accumulation over time. Other practices such as manure incorporation, cover crops, and drainage water management can further reduce P losses while increasing P efficiency.

P loading from urban and agricultural sources is considered to be the main nonpoint source of P to Lake Champlain. Our research group is actively researching ways to reduce P loss from soils at the field scale.

Justin Geibel (M.S. candidate in soil science at UVM) is evaluating the effect of drainage water management (DWM) in subsurface tile drained system on water and P loss. DWM uses in-line water control structures to raise the water table and slow down the rate of water exiting the field. It's been used successfully in the Southeast and Midwest, and the research so far does not indicate a yield penalty. Look for updates from Justin on his project in the near future.

Laura Klaiber started her M.S. in soil science at UVM this spring. Laura's environmental background and research technician experience at Miner over the past four years will be an asset for her as she takes the plunge into graduate school. Part of Laura's M.S. project will involve comparing water and P losses from tile drained and undrained field plots.

Steve Kramer continues to work with Dr. Bob Fuller at SUNY on various P leaching studies each fall semester. This year Dr. Fuller's soils class investigated P leaching in soil cores and P sorption in soils from DWM research field. These experiments are an important link between the classroom and the field, providing students with real skills they can take with them to future jobs or graduate school.

Lisa Klaiber just recently accepted a position with Champlain Valley Agronomics in Peru, NY. Lisa has been a research technician at Miner for the past four years working on dairy, agronomic, and environmental research projects. Lisa's new position will involve CAFO and other environmental planning responsibilities. We thank Lisa for all of her work and wish her the best as she transitions to her new position.

— Eric Young
young@whminer.com

Visit us online at **www.whminer.org**

THOUGHTS AND EXPERIENCE WITH LOW FORAGE RATIONS

Last month we discussed Miner Institute's experience with high forage diets. This month we'll cover our low forage experiences. What immediately came to mind was that with high forage rations, forage quality is critical. We need highly digestible NDF and more of it. With low forage diets the primary need is for physically effective fiber (peNDF); something to make cows chew and maintain rumen health since most of the digestible carbohydrate will be from non-forage fiber sources (NFFS) with little peNDF.

By definition, low forage diets for dairy cows can range from 40 to 50% forage. Reasons for this feeding scheme include low forage inventory/ poor crop year or the availability of NFFS such as soy hulls, wheat midds, DDG, citrus or beet pulp, almond hulls, cottonseed hulls or other vegetable wastes. The critical factor to keep in mind is maintaining rumen health and sufficient effective fiber. Most NFFS have low NDF content and particle size is generally short. Therefore not much cause for rumination in order to maintain rumen health.

Thumb rules:
• Minimum lbs DM from forage: 1.5% of BW
(1600 lb cow needs 24 lbs forage DM)
• Minimum forage-NDF (F-NDF): 15% of total ration DM
(60lb TMR DM requires 9 lbs of F-NDF)
• Minimum F-NDF as % of BW: 0.70%
(1600 lb cow needs 11.2 lbs F-NDF)

The table above is from the 2001 Dairy NRC, listing recommendations for forage NDF, total ration NDF, NFC and ADF levels. As F-NDF decreases allowable NFC, mostly starch, also needs to decrease, while NDF and ADF need to increase to order to provide sufficient physically effective fiber.

F-NDF% min	Total Ration NDF% min	Total Ration NFC% max	Total Ration ADF% min
19	25	44	17
18	27	42	18
17	29	40	19
16	31	38	20

We ran a "Low-starch Low-Forage" trial at the Institute looking at four levels of forage (52, 47, 43 and 39%) in low starch (20-21%) diets. In that trial, forages were replaced with DDG, beet pulp and wheat midds along with increasing levels of chopped straw (0-10% of ration DM). Milk production (>92 lbs) and milk components (3.6% fat, 3.0% protein) did not differ across treatment diets, however, as % forage decreased DMI significantly increased along with MUNs, chewing/unit of peNDF and ruminal turnover of OM, NDF and starch. Hence, the need for sufficient peNDF in the form of straw to moderate rumen fermentation and passage rate of ingesta.

When considering or faced with having to feed low forage diets/high NFFS diets, following are some things to keep in mind.

Monitor potential nutrient excesses:

• Ration %CP and CP fractions leading to excessive MUN and possible effects on reproduction and nutrient management.
• Ration P levels since many NFFS are high in P, leading to increased levels of P output and impact on nutrient management.
• Mycotoxin threat as they become concentrated in NFFS such as DDG, especially as climate and growing season extremes result in greater yeast and mold contamination of grain crops that provide NFFS.

Most notably when feeding low forage rations remember the need for "high quality low quality forage", good clean, mold and yeast-free peNDF to maintain rumination and rumen health.

— Kurt Cotanch
cotanch@whminer.com

For more information:
Larry Chase. Feeding lower forage rations. 2012 Feed Dealers Seminars Proceedings. Cornell University. Animal Science Publication Series #241. pp 59-61.

Mary Beth Hall and Larry Chase. Feeding cows during drought: forage substitute and by-product feeding. 2012 Feed Dealers Seminars Proceedings. Cornell University. Animal Science Publication Series #241. pp 62-66

CORN SILAGE PROCESSING: AN ECONOMIC ANALYSIS

I recently read an economic analysis of corn silage processing, by Larry Satter et al (USDA Forage Research Center, University of Wisconsin). In the past year corn shredlage has dominated discussions of corn silage harvest technology. Shredlage is the Real Deal and its use will almost certainly increase, but because the shredder unit is available only for certain recent vintage choppers, shredlage won't become the standard for many years — at least. Until then, corn processing will be "where it's at" for corn silage harvest management.

Satter estimated that processing corn silage will result in a 0.6 lb/cow increase in milk production. While I think this is a bit low — I've long used a 1 lb milk response — using the 0.6 lb figure means that a cow will produce 183 lbs more milk per 305-day lactation. With milk at $20.00/cwt that's $37. Satter assumed a $4 increase in feed cost to cover the increased feed intake needed to produce the additional milk. Feed costs have risen since he wrote the article, so let's assume a $6 increase in feed cost, leaving a net of $31/cow. Satter estimated $9,000-15,000 for the processor unit; we'll use $15,000 since machinery prices have also increased. $15,000 depreciated over 5 years is $3000/year. Dividing the $3000 annual processor cost by $31, you'd need at least 97 cows to justify a processor unit when purchasing a new forage harvester. That's very close to the 100 cows I suggested about 10 years ago in a Farm Report article on corn silage processor economics.

If you have your corn custom harvested, how much can you afford to pay to have it processed? If your custom guy's chopper has a processor unit he's unlikely to give you a choice. But assuming a corn silage feeding rate of 7.5 tons/cow/year, with a $31/cow profit margin you could afford to pay an additional $4.00 per ton of silage to have your corn processed. In Satter's study custom rates ranged from nothing to $1.50/ton, so having your corn processed seems like an easy winner.

Two cautions: First, processing an immature crop — under 30% DM — will greatly increase effluent losses. You don't want this and neither do the EPA and your state environmental regulators. Second, processor clearance typically varies between 1 and 3 mm, with the clearance depending on both kernel texture (a genetic trait) and kernel maturity. It's up to the farmer — regardless of who's in the chopper seat — to make sure that the kernels are properly processed. That means almost every kernel broken, ideally into at least four pieces though this can vary with kernel texture.

— E.T.

2013 Herd Health and Nutrition Conference

Presented by PRO-DAIRY and Northeast Ag and Feed Alliance

April 10 at Double Tree Hotel in East Syracuse, NY

April 12 at The Fireside Inn & Suites in West Lebanon, NH.

The Herd Health and Nutrition Conference provides an opportunity for dairy producers, veterinarians, feed industry representatives and agriservice personnel to increase their knowledge of current herd health and nutrition management techniques while interacting with other professionals. The format will be a combination of PRO-DAIRY's Fall Dairy Conference and Northeast Ag and Feed Alliance's Ruminant Nutrition Conference.

Program Topics:

- Recent research on hypocalcemia and immunity. Dr. Jesse Goff, Iowa State University
- Group feeding of calves. Dr. Michael Capel, Perry Veterinary Clinic, Perry, NY
- Economics on the farm. Jason Karszes, Pro-Dairy, Cornell University
- Advances in corn silage. Dr. Randy Shaver, University of Wisconsin

To register, contact Heather Darrow, Conference Coordinator at (607) 255-4478 or hh96@cornell.edu

THE BIG SEVEN-O

I turned 70 last month. I recently read that if you haven't grown up by age 50 then you don't have to. Sounds good, but what does this suggest about 70? Advancing age may result in some perspective, though I'm aware of the saying that "With age comes wisdom, but sometimes age comes alone." Or as the Pennsylvania Dutch say: "Ve get too soon oldt and too late schmardt." Nevertheless, following are a few observations based on almost 50 years of working with farmers:

• Managers of the top dairy farms are seldom satisfied, always looking to improve, while those in the lower tiers frequently have a litany of reasons why they can't do this or that. U.S. farmers aren't alone in these characteristics: Many years ago when Hungary was a Soviet satellite I worked with some large (2000+ cow) state-owned Hungarian dairies. I visited one dairy with good but not great milk production, and the management had a reason (excuse) for every less-than-ideal practice. "Good" was good enough. The next farm had the top herd average in the nation, but the management there wasn't satisfied with anything. They wanted better corn hybrids, better bulls, and what they could do to improve cow and crop management. That was a fun and challenging visit, and I concluded that this farm was likely to remain at or near the top for a long time.

• U.S. corn yields have been increasing for generations, but by little enough on an annual basis that we may not fully realize the long-term impact of genetic progress. In 1970 the grain yield of many if not most corn hybrids topped out at about 24,000 plants/acre, and it was often a race against time to get the crop harvested before lodging became an issue. Today's hybrids yield well at 30,000/acre with lodging seldom a problem, especially when the crop is harvested for silage.

• In 1970 the variety options for early-maturity soybeans were very limited, with the better varieties yielding perhaps 30 bushels per acre. Often some pods were so low on the plant that combines couldn't harvest them. Now farmers have many variety options in early-maturity soybeans, with yields often topping 50 bushels per acre on upstanding, vigorous plants. And because of the almost universal use of glyphosate-tolerant varieties, weed control is simpler and represents a much lower percentage of input costs.

— Ev Thomas
ethomas@oakpointny.com

PUTTING LIPSTICK ON A PIG

The Bride was consulting with a building codes official about a planned house renovation (T.B. is a designer/draftsman) and commented that she didn't want to "put lipstick on a pig." Not that the house was ugly because it wasn't, just that sinking too much money into the renovation wouldn't be a good investment for the homeowner.

So it is with "renovating" farmland. In the summer of 1979 Miner Institute took back the operation of its farm from Cornell University. At the time we owned 8700 acres of land but had less than 300 acres of cropland, barely enough for the 160-cow dairy herd. We figured that there must be some of the vast land holdings that we could turn into cropland. We weren't in a position to buy cropland, but had the labor and equipment needed to renovate some of what we owned. So over the next five years we converted permanent pasture to cropland, recovered some fields that William Miner once farmed but had since grown up to brush (and in some cases to forest), and brought still other land into production for the first time. Over several years we brought over 90 acres into (or back into) production.

After growing crops on this land for about 25 years (early 1980s through my retirement in 2008), my conclusion is that if William Miner didn't plant crops on a piece of land there was usually a good reason for it. Over 2000 years ago in his book Farm Management, the Roman statesman Cato stated: "Do not rashly condemn the experience of others." We should have listened! There were a few exceptions including where we were able to tile drain some wet fields, but this only amounted to about 20 acres. And draining a wet field doesn't make it a well-drained one. For the most part, in trying to make most of these fields into productive cropland it turned out that we were simply putting lipstick on a pig.

— E.T.

FOOD FOR THOUGHT

It's predicted that the world's population will peak at nine billion in 2050, though because of huge increases in Africa's population the peak may be 10 billion by 2100. Food production will have to increase greatly to feed all these extra mouths, but much less is said about who will produce this food. Here are a few facts worth noting, especially if you expect to be involved in the food production system.

To sustain its current population a nation's total fertility rate (TFR) must be 2.0 per woman of child-bearing age. In the U.S. the current TFR is slightly under 2.1, so our population is expected to increase modestly in the coming decades. This is not the situation in a number of other developed countries: In Western Europe the TFR is 1.5, 30% below a sustainable rate. At this rate by 2045 there will be 70-80 million fewer people in Western Europe (exclusive of immigration). Why the low TFR there? Fewer people are getting married, and fewer couples want children. The situation in Europe has been called a "demographic death spiral" but it's even worse in Japan, where the TFR is a stunning 1.4. Japan is aging so fast that by 2020 one out of every five people will be over the age of 70. Nobody has ever figured out how to run a society when 20% of the population is over 70. In most of the Muslim world the TFR is above 2.1 but in some of the more populous Muslim countries it's declining, including Iran at 1.9. Israel's TFR of 2.7 is the highest in the Western world (Genesis 35:11 — "And God said to him… Be fruitful and multiply", "him" being Noah). In India it's 2.6 in spite of government efforts to reduce population growth. China's TFR is about 1.5, similar to that of Western Europe, Australia's is 1.8 while in Canada it's a very low 1.6. Our Northern neighbor is shrinking before our eyes.

The impact of TFRs that are less than replacement level will vary greatly depending on the nation. China has 1.3 billion people but there are spot shortages of labor in some parts of the country. Several generations of the strictly enforced "one couple, one child" edict has taken its toll. Young men outnumber young women by over 10% primarily because of selective abortions, and many young women have moved from the country to the city, found good jobs and don't want to have a child. China's population is projected to grow by another 100 million by 2050, but it will be an increasingly aging society. By 2050 China will have almost twice as many people over the age of 50 as it does today. When I was there five years ago my U.S. host who had lived there for 13 years commented that "Japan got prosperous before it got old, but China will get old before it gets prosperous."

By 2050 for the first time in history there will be more people in the world over the age of 55 than under the age of 15. This is significant because older folks aren't as productive, they don't spend as much, sex is primarily for recreation and not procreation, and they require a lot more medical care.

These are important numbers for those of us in agriculture. Look at where the predicted population growth will be: Most of Africa has a TFR above 5.0, including sub-Sahara nations such as Ethiopia. What is the future of food production in these nations? How likely are these nations to boost food production enough to feed their rapidly increasing population? Population is declining in many nations that are currently food exporters, while increasing in areas that are either food importers and/or already in a state of famine. Increasing the efficiency of food production (more food per unit of land and per hour of labor) will be important, but we will also need much more food production in the currently food-deficit nations.

— E.T.

MY OWN STORY ABOUT THE DAIRY INDUSTRY DEVELOPMENT IN CHINA

Based on a USDA report published in December 2012, the US export of whole milk powder and skimmed milk powder to China is forecasted to increase by 12 and 18% respectively in 2013. The increased dairy food consumption is not only due to economic growth, but also linked with the changes in eating habits and food culture in China. I will tell my own story about dairy availability throughout my childhood in China.

I was born in 1982 in a middle-class family. My parents were both technical workers in a military factory. My hometown was a middle-sized city with about 4 million people in the northeast part of China, which was not traditionally dairy land as in most other parts of China. According to my mother, cow's milk was rarely available when I was an infant. Most mothers breastfed their children until age 1, then most babies were weaned and started to eat porridge and other adult food. Most families could not afford to buy milk powder at that time, of which only one or two brands available in the market. Fresh soy juice and porridge were the most popular breakfast items for most families like mine when I was in elementary school. There were almost no individual dairy farmers; the very limited numbers of dairy cows were raised by state-owned farms.

In the early 1990s, when I started middle school, I recall that peddlers would sell "fresh milk" on the streets, and their loud voice would often wake me in the morning. The peddler was our only source for fluid milk. At that time, my parents' monthly salary was about $25 (calculated based on $1=6.5 Yuan) each. One pound of milk cost about 8 cents then, and my mother started to buy a half pound of milk for me two or three mornings a week, as she knew that milk was good for my growth. However, the milk was relatively expensive and not always available and my parents rarely drank it. It was raw milk, so we boiled it before we drank it (I now know that compromised the bioavailability of milk proteins) and we always added sugar to it. Although I like the taste of milk, I often had three days of diarrhea when I resumed drinking it after not having it for a couple weeks.

Chinese ice cream was made into a small brick-shape and was hard to bite (now I understand that it was because of lower milk components) though it was good enough for me at that time! If someone bought me a 3 cent ice cream, they were my best friend! Birthday cake was very precious to me as a child and it was my only real chance to eat ice cream. Yogurt was just a concept to me that I heard about in a letter from a friend who had moved to China's capital, Beijing, during my first year of middle school.

The first McDonald's in China opened in the southern city of Shenzhen (the most economically-developed area in China) in 1990. It arrived in my hometown in 1998. For most middle-class families, salaries began to rise more steadily in the mid-1990s. Having a meal at McDonald's or KFC became a treat for me during traditional holidays or whenever I had good performance on a final exam. Ice cream was always part of my order! Western fast food brought with it the concept that consumption of dairy products (primarily milk at that time) was linked to quality of life. Meanwhile, the government began to stimulate growth in the dairy industry through the initiation of policies and increased investment. Yili and Mengniu became the most well-known dairy brands. Suddenly, pillow-packs (~250 mL) and tetra pak UHT milk and a few varieties of yogurt started to appear on supermarket shelves. A package of tetra pak milk was a popular gift during the lunar New Year for most middle class families in the early 2000s. Although in the US we consume dairy at all times of day, breakfast is generally the only time of day that Chinese drink milk, and it is primarily for people in my generation or younger. Although the price of milk is not such a big concern anymore, the older generation still prefer more traditional soybean products (soy juice, and uncongealed Tofu soup) in the morning.

I was last home in 2010. The average salary for a middle class family at that time had increased more than 20 times compared with my family's salary in the early 1990s. The milk products, yogurts, and ice creams from local, national, and international brands filled even more shelves in the supermarkets such as Walmart and Carrefour than in the US. Although there are numerous safety concerns with Chinese dairy after the melamine scandal, I noticed that more people seemed to consider milk a daily essential product like eggs. Cheese (which is very expensive) and butter are not purchased much as they are not traditionally used in cooking Chinese cuisine. However, you will find western chains such as Starbucks and Pizza Hut in most Chinese cities. This indirect purchase and consumption of cheese, butter, and other dairy products may be significant.

My 11-month-old daughter is likely to consume more dairy than I did growing up and it won't just be at breakfast!

— Peng Ji
ji@whminer.com

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

Change Service Requested

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

Closing Comment

Hospitality is the art of making your guests feel like they're at home, even if you wish they were.

www.whminer.org
518.846.7121 Office
518.846.8445 Fax