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University Extension

DAIRY News & Views from the ISU Extension Dairy TEAM

Volume 27 www.extension.iastate.edu/dairyteam April, 2010

Chris Mondak

Larry Tranel

Jenn Bentley

We want to take this opportunity to introduce Jenn Bentley to our Iowa dairy industry. Jenn recently became the Dairy Field Specialist for Northeast Iowa, replacing Dale Thoreson, to serve Allamakee, Winneshiek, Howard, Mitchell, Chickasaw, Bremer, Fayette, and Clayton counties.

Jenn grew up on a dairy farm in Mitchell County, where her parents have expanded the dairy to 200 cows with the partnership of two brothers. Jenn graduated from NICC and transferred to ISU graduating with a B.S. of Dairy Science Degree. In 2002, Jenn joined the ISU Research and Demonstration Farms as a Research Technician/Calf Manager at the Northeast Iowa Community Based Dairy Foundation in Calmar.

For 7 ½ years she worked extensively with the calf and fresh cow program, as well as assisting in the day to day operation of the dairy farm. Jenn was also responsible for collection of data for research projects being conducted at the Dairy Foundation.

Jenn and her husband, Noah live near Castalia with their son, Owen (4), and daughter, Addison (1 ½). We are really looking forward to Jenn being a part of the ISU Extension Dairy Team, and working with producers in the Iowa dairy industry.

When you get a chance, please welcome Jenn to ISU Extension. Also, as we encounter the many issues we are currently facing in the dairy industry, please give us a call if we can assist you in your decision-making.

Chris Mondak
ISU Extension Dairy Field Specialist, NW Iowa

Jenn Bentley and Larry Tranel
ISU Extension Dairy Field Specialists, NE and SE Iowa

NE Iowa Pasture Walks

May 5th 1-3 PM. Topics: Pasture Renovation & Lanes. John Palmer, 321 Countryside Drive, Waukon, IA.

June 23rd 1-3 PM: Topics: Colostrum management discussion by Jenn Bentley. Scott & Gary Wedemeier, 18663 – 110th Street, Maynard, IA

July 6th 10:30-12:00 PM. Topics: Millionaire Model Farms and Low-Cost Parlors by Dr. Larry Tranel. Chris Rinniker, 33198 Evergreen, Strawberry Point, IA

July 28th 1-3 PM: Topics: Organic, seasonal dairying grazing. Dave Baker, 30999 Kale Rd., West Union, IA

August 3rd 1-3 PM Merlin Gesing and Joel Weness, 835 McCabe Drive, Waukon, IA

August 17th 10:30 AM Vance & Bonnie Haugen, 12620 Deer Road, Canton, MN

November 3rd 1-3 PM: Topics: Late season grazing, out wintering heifers with use of hoop buildings, Jeremy Peake, 323 N Line Drive, Waukon, IA

4-State Dairy Nutrition and Management Conference, June 9-10, Dubuque, IA

** Maximizing Efficiency to Create a Profitable and Sustainable Dairy Business featuring: Dr. Bill Thatcher (Florida); Dr. Mike Overton (Georgia); Dr. Tom Jenkins (Clemson); and Dr. Jude Capper (Washington State).

**Feeding Economics in 2010; Importance of Technology in Food Production; Yeast Counts and Corn Quality; Manure-ology 101; Maximizing Cow Comfort; Coordination of Reproductive/Nutritional Management; Using Records to Evaluate Transition Cow Performance; and more.

Call 608-223-111 or email info@wasa.org for more information on this Extension program. www.wasa.org

ISU Extension Dairy Team

"Bringing Profits to Life"

Dairy Field Specialists

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- *Dr. Lee Kilmer lhkilmer@iastate.edu*
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- *Dr. Jan Shearer*

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Inside This Issue:

Challenges in Pasteurizing Waste Milk

By Jennifer Bentley, ISU Dairy Field Specialist, NE Iowa

Using a pasteurizer can be an excellent management tool in raising calves. However, you can't just buy a pasteurizer and walk away from it, expecting it to do the job on its own. It requires regular maintenance, cleaning and sanitizing on a daily basis, and routine monitoring of the milk being used. The calves will be the ones to tell you if it's truly working by monitoring treatment rate, disease incidence, and death loss.

Clean! Clean! Clean! Proper cleaning of all pasteurization equipment, bottles, and tanks is important in decreasing bacterial growth. Any build-up of fat and protein on the equipment can interfere with heat transfer. Batch pasteurizers need to be cleaned and sanitized by hand after each use. High Temp-Short Time pasteurizers are cleaned automatically, but require an adequate hot water supply to clean effectively, below 180 F but above 170 F.

Proper Cooling of Milk You need to treat waste milk like it is marketable milk. That means getting it cooled down to 40 F. If you are not going to pasteurize or feed the milk within 1-2 hours, it needs to be refrigerated. Leaving milk set out, especially during the summer months, increases the number of bacteria growing. This also drives the pH towards a 4.5; milk protein will start to coagulate at a pH of 4.6 (U. of MN).

Nutrient Management Nutrients can change based on the number of mastitis cows and fresh cows being milked. If a cow is producing abnormal looking milk (watery or bloody), avoid using this milk as its nutrient content will be very limited. You should also be aware of the amount of water being flushed through the lines at the end of milking. You may start with a high level of nutrients, but can be easily diluted down with this water. It is a good idea to routinely sample milk for total solids, fat and protein content to accurately determine nutrients.

Sample! Sample! Sample! Routine cultures of milk samples will help determine how well the pasteurizer is working.

- Pre-pasteurized: <1,000,000 CFU/ml total count
- Post-pasteurized: <20,000 CFU/ml total plate count

(Cullor, 2003)

If your total plate counts are higher than the ones given above, then you need to go back and analyze your handling procedure and pasteurization protocol.

Avoid Incomplete Pasteurization

Incomplete pasteurization can occur if the pasteurizer malfunctions, or person operating it has overridden the system. Personnel may feel like they are in a hurry and so they choose to pasteurize for only 15 minutes instead of the 30 minutes that is required. This results in higher amounts of bacteria not being destroyed and the potential for pathogens to infect your calves.

Personnel Management

- Train all employees that will be using the pasteurizer to be sure they understand the concept of pasteurization and how to operate the unit.
- Conduct follow-up training and review for employees to reinforce procedures.
- Keep a daily log of who prepared the milk and the time it took to reach goal temperature.

A pasteurizer can be used like many other tools on your farm. Reviewing protocols and procedures will just as important here as it is in your milking parlor.

Pasteurizer Field Study

As a follow-up to my Dairy Days presentation on current issues on pasteurization, we would like to do a field study on handling procedures of waste milk. This would involve gathering information from producers on how they transport, cool, pasteurize and feed their milk. It would also include collecting milk samples pre and post pasteurization to help determine bacteria count and pathogen load. These samples will also help determine nutrient content as well. If you would like to be involved in this field study, please contact me by phone at 563-382-2949 or by email at jbentley@iastate.edu .

Welcome to Dr. Stephanie Clark

Dr. Clark joined the faculty of Iowa State University (ISU) in August, 2009. She is focusing her research in sensory evaluation of dairy products, particularly probiotic dairy foods. Her goal is to bridge gaps among important food quality and human health issues associated with probiotic dairy foods, specifically sensory quality, shelf life, consumer acceptability, culture interactions, human bone health, and human gut health.

Stephanie considers ISU a great place to pursue this area of research because of the expertise and strong collaborative nature of colleagues in Food Science and Human Nutrition at ISU. Stephanie also plans to interact with the dairy industry of Iowa to evaluate their needs, which may lead to additional research areas. **We welcome her to the ISU Dairy Team.**

Zero Capital Gains Taxes. Are You Ready To Take Advantage?

If you sell a farm in 2010 for more than you paid for it, the gain would not be subject to a capital gain tax, if you are in the 10% or 15% tax brackets for ordinary income. Several years ago changes in the US tax policy ratcheted down the rate charged on capital gains until the tax rate was zero percent for some tax payers through year 2010. Holders of farmland would be some of those taxpayers that may benefit from the zero tax rate on capital gains, according to agricultural law specialist Roger McEowen, Director of the Center for Agricultural Law and Taxation at Iowa State University.

McEowen says, "This zero percent rate became available beginning in 2008 and raises significant planning questions and opportunities for lower-income taxpayers, and other taxpayers that can utilize tax management strategies to minimize income to take advantage of the zero percent rate."
After December 31, 2010, the capital gains tax rate will be placed with higher rates, such as the 20% rate for property held a short time or 10% on property held for more than 12 months.
McEowen says the people who would most benefit from the zero percent rate are retirees, prospective retirees, semi-retirees, and other low income taxpayers that would include children.

1) Taxpayers that are fully employed or with higher rates of income will likely be in tax brackets higher than the 15% rate, and will not be eligible for the zero percent rate on capital gains.

2) Persons contemplating early retirement may have the option to generate retirement income by selling property that would not be subject to capital gains.

3) Retirees on modest incomes may be in a lower tax bracket, making them eligible for the zero percent tax on capital gains.

4) Semi-retirees who have engaged in tax planning may be able to implement a sale of property to benefit their retirement.

5) Children who are in low tax brackets because of lack of income, but who have interest in gifted property, may benefit from the provision.

But what about farmers? McEowen says if there is a plan to sell property that would trigger a capital gains tax in 2010, there is significant tax planning that should be done as soon as possible. Your goal should try to keep 2010 tax liabilities in the lower tax brackets by minimizing 2010 income.

1) Use expense method depreciation for purchased farm equipment.

2) Elect farm income averaging if 2010 income would be higher than the prior three years. That would take some of the 2010 income and spread it backward to years that may not have had high tax liabilities.

For more details on the zero percent rate for capital gains and related planning opportunities, see McEowen's article at
http://www.calt.iastate.edu/briefs/CALT%20Legal%20Brief%20-%20Zero%20Percent%20Capital%20Gain%20Rate.pdf

Holstein TPI Revisions Reflect Traits Emphasis

by Ron Lenth, Bremer County Extension

Dairy producers in the US and internationally, are breeding for that balance of milk and component production, along with physical and management traits that dictate profitability. It's a continuing challenge to producers and geneticists alike. One method to combine these many traits is the Holstein TPI formula, and is constantly being evaluated with changes in research data and emphasis.

In January, 2010, changes reflecting commercial dairy producer emphasis, resulted in modifying the TPI formula with the following key features:

44% emphasis on production
25% emphasis on early breeding
19% emphasis on udder health
7% emphasis on mobility
3% emphasis on calving ability
2% emphasis on body size
TPI is one of several sire ranking systems available. All have the goal of producing more profitable cows.

Breakfast on the Farm Set for June 19

Planning is underway for a new dairy event! Breakfast on the Farm is scheduled for Saturday, June 19 at The Dairy Center in Calmar. The Northeast Iowa Dairy Foundation is working with area dairy promotion groups, commodity groups, local organizations, ISU Extension and NICC to create this family event. The focus is on Awareness of Agriculture and promotion of dairy products. Breakfast will be served from 7 to 11 a.m. and a large turnout is expected. Anyone with questions or who is interested in volunteering (many needed!) can contact Jenn Bentley at jbentley@iastate.edu or Kelli Boylen at info@iowadairycenter.com or (563)534-9957 ext 107.

Value of Dairy Open Houses as Learning Events to Improve Consumer Understanding of Modern Animal Agriculture *by: Leo Timms/Chris Mondak*

Two dairy open houses as part of June Dairy Month events were conducted to provide the public the opportunity to experience and learn first-hand about the efforts made daily on modern dairies to achieve cow care, cow comfort and health, hygienic milking procedures, local cropping systems that provide quality feed for the dairy herd, manure management and land stewardship, respect for family and non-family workers, and overall quality and safety of milk and dairy products. These events were a product of industry partnerships and reached 1700+ participants.

Surveys performed at both events showed that many participants had trust in dairy farmers and the dairy industry prior to the event, but post tour surveys showed enhancement in their knowledge of modern dairy practices that assure animal health and comfort, product quality and safety, and environmental stewardship and preservation.

ISU Extension Dairy Team workers partnered with Iowa's dairy producer and industry associations, other farm and commodity organizations (ISU site) and the regional dairy check-off organization, Midwest Dairy Association, to plan and host Dairy Farm Open House events as part of "June Dairy Month" activities in 2009. Partners included: Iowa State Dairy Association; Western Iowa Dairy Alliance, Northeast Iowa Dairy Foundation, Coalition to Support Iowa Farmers, Midwest Dairy Association, Iowa Farm Bureau, Iowa Dairy Processors (Roberts Dairy, Swiss Valley Farms, Anderson Erickson, AMPI, and Wells) and the Iowa Egg, Pork, Beef, Soybean, and Corn commodity groups (ISU).

The purpose of the summer 2009 Open Houses – one in central Iowa at the ISU Dairy Farm and one in NW Iowa at a large family-owned dairy farm was to provide experiential events in line with the theme and philosophy of the Dairy Industry Sustainability Initiative. Open House coordinators planned events for the general public where they could see and learn first-hand about efforts made daily on modern dairies to achieve cow comfort and health, hygienic milking procedures, local cropping systems that provide quality feed for the dairy herd, manure management and land stewardship, and respect for family / non-family workers.

Both sites incorporated a tour of the dairy with designated stations to showcase and educate on specific attributes of dairy farms (animal comfort and health, milking practices, product safety and quality, environmental stewardship). Members of the dairy community—dairy producers and agri-professionals- served as tour guides and narrators.

In this way, guests learned facts about dairy herd management and production directly from the people who work on or serve the farm. Both events also incorporated opportunities to showcase and taste existing and new dairy products. The ISU Dairy Open House also had an agricultural learning center that encompassed interactive learning displays from all the commodity groups as well as an interactive agricultural display and maze on environmental stewardship. Both events incorporated surveys to assess participant knowledge and interests in the dairy industry and dairy practices. To see more information and the survey and results: **http://www.ans.iastate.edu/report/air/2010pdf/R2516.pdf**

Reproduction Benchmarks / $$$

by: Dr. Leo Timms, ISU Extension Dairy Specialist

Often times when producers and others (bankers, etc) are evaluating herd performance and dairy profitability (income, expenses, etc.), reproduction doesn't enter the conversation. It may show up as an expense item (semen, labor, veterinary) but its true impacts go across all income and expense areas and getting animals bred in a timely fashion may have the greatest effect on farm profitability. Achieving excellent reproduction on the income side means more milk production/ cow per unit time, decreased involuntary culling, and more replacements. On the expense side, excellent reproduction decreases semen, labor, and veterinary expenses, as well as decreased feed costs and input for both cows and replacements. The key is to focus on both cows and replacements as replacement health and reproduction can dramatically affect farm profits. Below are some key reproductive / replacement benchmarks and economics.

Dairy Cows:

- **Cow Pregnancy Rate (PR): > 20%**
  (PR = heat detection % X conception rate %)
  $ **$6-20/ cow/ 1% increase in PR**
  Higher $ value at lower pregnancy rates
- **Estrus Detection / Insemination rates: > 50-60%**
- **Conception Rates (cows): > 40%**
- **Days to First Service: 95% within 21 days of VWP**
- **% Total Herd Culled for Reproduction: < 5-8%**
- **% herd culled by 30 DIM: ≤ 5%; by 60DIM: ≤ 6%**
- **% death loss (cows): < 3%**
- **avg. days in milk: 160-180**

Dairy Replacements:

- **Stillborn (DOA): < 2%**
- **Birth-wean loss: < 3%**
- **wean-calve loss: < 2%**
- **age 1st bred: 13-15 m**
- **age at first calving: 23-24 months**

$ $45 – 60 /head/ month > 24 months

ISU Dairy Research Update: *by Leo Timms*

If you build it, they will come and the new ISU Dairy Farm is no exception. The dairy has been a springboard for excellent teaching and extension efforts and a hub for dairy research (many new (and old) faces and projects. Below is a list of the people / projects (current / planned). Future articles will feature results/applications.

Dr. Lance Baumgard, nutritional physiology (AS)
- Transition cow metabolism / Heat stress
- Effect of supplemental zinc on health / performance
- Heat stress / adipose metabolism (joint w/Spurlock)

Dr. Don Beitz, nutritional physiology (AS)
- Improving milkfat composition by marker selection
- Altering milk fat composition through dietary means
- Feeding lactobacillus/ propionoibacteria: effects on health/ performance / immune system

Dr. Jesse Goff, DVM, nutritional physiology (CVM)
- Transition cow nutrition / metabolism
- Enhancing postpartum uterine health / immunity

Dr. Pat Gorden, DVM, dairy production medicine (CVM)
- Using genetic tools / tests to evaluate clinical mastitis
- Dairy ventilation / air quality studies

Dr. Kayoko Kimura, dairy physiology (CVM)
- Effect of green teat extract on neutrophil function
- Characterization of mastitis using endotoxin model

Dr. Bruce Leuschen, DVM, dairy production med.(CVM)
- Assessing passive immunity transfer

Dr. Suzanne Millman, animal welfare / behavior (CVM)
- Pain tests/ analgesic during calf disbudding
- Evaluation of weaning strategies on calf performance

Dr. Jan Shearer, DVM, dairy physiology / welfare (CVM)
- Digital dermatitis / lameness models (joint w/Gorden, Leuschen. Millman, Elliot (NADC), Timms)

Dr. Diane Spurlock, molecular genetics (AS)
- DNA collection from ISU Dairy herd
- Metabolic activity of dairy adipose tissue
- Genetic regulation of energy balance in dairy
- Regulation models of lipolysis and adipose utilization

Dr. Leo Timms, dairy physiology (AS, CVM)
- Teat health / conditioning using lactating teat dips
- Development / evaluation of dry cow sealant dips
- Evaluation of non-antibiotic mastitis therapies
- Evaluation of separated manure solids for bedding

Dr. Howard Tyler, dairy physiology, (AS)
- Fermented soy products for calf starter diets
- Factors affecting suckling behavior in newborns
- Models to evaluate gut passive immunity transfer

Dr. Paul Plummer and Dr. James West, DVMs (CVM)
- Formic acid for treatment for colostrum / waste milk

AS: Animal Science Dept./CVM: College of Vet Medicine
- http://www.ans.iastate.edu/species/dairy/
- http://vetmed.iastate.edu/vdpam

Snowload and Dairy Barn Roof Collapse: Producers and Builders Share Take Home Messages from Winter of 2009-10

Chris Mondak,DVM, ISU Extension Dairy Specialist

Although winter weather is not a new phenomenon in Iowa, Iowa experienced a tougher winter in 2009 -2010 in terms of snowfall and challenging weather days. The weather took its toll on all of us, and for some the burden was complicated by the disaster of a barn roof collapse resulting in costly property damage, death of some cows, and general disruption of routine. *Judging from comments of ISU climatologist, Elwyyn Taylor, our region is entering a 10-20 year cycle of winters with likely heavier snowfall than we've seen in the previous 20-year cycle.*

With this in mind, it would be wise to use the spring and summer season to assess ag buildings' structural strength. This article summarizes advice gathered from dairy owners, builders, and engineers who dealt with roof problems this winter. We appreciate their willingness to share what they learned from their hardship in order that others may take preventative actions before next winter.

Heavy snow and ice caused barn roof collapse at Tukker Dairy in Pocahontas County shortly after Jan 1, 2010. Owners Johan and Jolanda Koezen give credit to a good insurance policy to help them recoup the damages of property, cow deaths, and subsequent elevated mastitis due to exposure.

Monitor, recognize and respond to snow conditions that threaten roof strength. In the experience, of Bernie and Dan Bakker from Rock Bottom Dairy in Lyon County, it's easy to be deceived about the amount on the roof. What they estimated to be 2 feet of snow turned out to be 4 feet, and it was heavy due to the layer of ice that came down first. In other words, while barns in their part of the state are

built to handle 25-30lbs snow load, the snow and ice that accumulated was actually closer to 60 lbs and more. Bakker noted that the snow accumulated most near the sidewalls, and at the juncture in the roof where 2 barns met. This is where he saw the collapse: The peak stood, but the edges of the roof and sides came down.

Terry Van Maanen at Winding Meadows Dairy agrees about the need to watch snow accumulations. He too was deceived about depth of snow: From the ground he didn't realize he had over 30" on the roof. He's contemplating installing meter sticks along the roof to help gauge snow depth. Furthermore, Terry hypothesizes that the problem was not just snow load, but instead due to a shift in snow load weight. During a few mild days, melting caused snow to flow to the roof edge, but ice dams at the edge held snow and ice on the roof, resulting in build-up near the roof edge. In Terry's view, this shift and accumulation of weight over a long period of time is what brought down the roof.

Aaron and Nate Jones from Jones Dairy in Clay County advise to monitor the storm conditions and to recognize which conditions pose a threat to buildings. For the Jones Dairy, the combination of rapid accumulation of heavy wet snow on a 35 degree day created the critical conditions that brought their barn roof down Christmas Day. From the insight gained in their ordeal, the Jones family makes these recommendations to fellow dairy owners:

1) Monitor snow depth by checking levels roof level. "You must go up on the roof," says Nate Jones. "Looking from the ground up creates an optical illusion. You must go up to get a accurate measure of snow depth." Check the snowload ratings of your barn. If too low for recommended strength in your region, reinforce rafters or replace gussets.
2) Check your insurance coverage.

Barn inspection & preventative maintenance

At Dry Creek Farm in Sioux County, Glenn Rozeboom and sons were working to clear snow from a roof when the collapse occurred. Wisely, they were not the roof itself, but were positioned in a lift bucket while blowing snow off the roof. In their case, a mismatch in roof height between a lower older barn and a higher newer barn set up a situation of heavy snow accumulation on the lower roof. After doing a post-collapse walk-through inspection with building consultant Dennis DeStigter, Rozeboom would now counsel fellow dairy owners to take a careful walk-through each summer and fall. Look for steel clips in wooden rafters that are loose or rusting. Look for areas of the barn that need additional upright bracing – especially in the center of the barn. Look for poles and other uprights that are dry or cracked. Be sure to replace poles that have had too many close encounters with a skid loader or tractor.

Johanda Koezen of Tukker Dairy stands by one of the many "mountains" of snow accumulated on the dairy farm from the heavy snowfalls in December and January. As recent new-comers to America from Holland, the barn roof collapse was certainly an unwelcome event, but there is a positive side to the story. Jolanda reports that they were overwhelmed by the spontaneous and generous response of aid and assistance from their neighbors: Some brought heavy equipment to help with the roof, many brought meals, some took in the Koezens' two kids for a few days so that Johan and Jolanda could focus on the damage response and control. What does she think of her new American neighbors? "They are wonderful!"

Viewpoint of builders and engineers:

Mike Meyer (Meyer Construction) explains that ag buildings typically are made to withstand short-term overload, but not for weeks of months of prolonged overload. His recommendation is to be sure your barn is built for the expected snowload in your region. According to Meyer, in Iowa that snowload range is 20-40lbs. However, the Christmas blizzard and subsequent snowfall created extreme snowload conditions. "This storm was a fluke – it blew snow across the gable and caused it to drift heavily on the south side of the peak. The engineer who investigated the roof collapse at Koezen's barn (in Pocahontas County) reported 80lbs snow load measurements on the remaining roof."

Dennis Destigter (Hoksbergen and DeStigter) observed a combination of factors that created problems for barn roofs: The first snowstorm laid down a glaze that caused snow to adhere and accumulate – instead of blowing off or sliding off as seen in other winter storms. He also noted that heat from within the barn added warmth to the roof, causing ice formation and additional weight on the roof. In his view, the barn roofs most at risk this past winter were those that had a roof deflecter installed – or had any sort of structure that encouraged formation of drifts on the barn roof.

He also noted that barns with trusses seemed to have more problems than did the barns utilizing rafter construction. Practical "take home" messages that DeStigter will apply as an builder include these: avoid roof deflectors, offer building design plans that include a 30lb snow load option, and encourage use of roof insulation to decrease heating of roof surface and subsequent ice layer formation. He recommends inspecting and strengthening barns now before next winter, and strongly encourages farm owners to double-check their insurance policies to be sure they have replacement coverage for building and livestock.

Ed Herbst (Sioux Dairy Equipment) has been involved in several cross-ventilation barn building projects. To his knowledge the flat-roofed cross-ventilation style free stall buildings did not show an accumulation of snow in this winter's blizzards. Instead, wind action blew the snow off the roofs, where it then accumulated in large drifts along sides of the buildings. The take home message for the owners of this style of barn is to plan for a driveway along the building that will accommodate snow removal equipment.

Good insurance coverage mitigates financial losses. Several dairy owners financially survived the roof collapse damages due to good insurance coverage. From their experience, these owners found that having an insurance plan that provided replacement cost coverage, plus coverage for livestock loss and incident-related decrease in livestock productivity was a significant benefit in recovering from the loss.

Making Structural Changes to your Barn? Important Terms and Factors to Consider

Shawn Shouse, ISU Extension Ag Engineer
sshouse@iastate.edu

Confusion often arises in discussions about building snow load design due to terminology used by designers. When discussing snow load design for a building, make sure you ask questions and understand the terms being used. Additionally, when considering making building adjustments to prepare a barn for winter conditions, it is important to consider the all the building's factors. Be sure to consult with the builder before making structural changes.

Snow load terminology

Ground snow load: This is the expected weight of snow on the ground for the worst storm expected in a certain number of years. In Iowa, for the 50-year storm, this number ranges from 25 pounds per square foot in the south, to 40 pounds per square foot in the north.

Roof snow load: This is the snow load assumed to be on the roof from the design storm. Designers get this number by starting with the ground snow load and applying reduction or increase factors that account for the exposure of the building (how well wind can blow snow off the roof) and importance of the building (more safety required when humans occupy the building).

Design live load: This is the load applied to the building structural members for the design calculation. Live loads include wind, snow, occupant and stored material loads. The live loads may have factors applied (or the allowable stress on the building members may be adjusted) to account for the length of time the live load is on the building. For example, wind does not last as long as snow.

Other factors to consider in making building adjustments. Roof snow loads and live loads may be adjusted further for different roof configurations. Reductions in load may be assumed for steep roofs where snow is more likely to slide off. Increases are often applied for areas where snow is likely to accumulate more deeply, such as in valleys or on lower roof areas attached to taller buildings.

Building manufacturers can design for any load condition you desire, but more conservative load assumptions lead to more expensive buildings. When you compare, make sure you are understanding the actual design numbers being quoted. Make sure your designer knows if the building is being attached to an existing higher building or is in an area where wind is blocked from blowing snow off the roof.

Be cautious about modifying a building design. Adding a support post can interfere with the design assumptions for a truss and make it less safe. Adding additional lumber or splices or reinforcing must be consistent with the roof member designs in order to be helpful and not harmful. Always check with the building designer before modifying or reinforcing. Structural repair and reinforcing is possible, but must be done to work with the original design.

ISU Extension Farm Succession Workshops Coming this Summer!

ISU Extension is planning on hosting Farm Succession Workshops to assist beginning, transition and exiting farmers plan for their futures. Northwest Iowa will see this workshop in late June and Eastern Iowa will see this workshop mid-late summer. Exact dates and locations to be announced. Let's Plan, rather than just hope, for the future of our farm operations. Stay tuned!

Millionaire Model Dairy Farms, 2009

by Dr. Larry Tranel, ISU Extension Dairy Specialist, NE/SE Iowa

ISU Extension's Millionaire Model Dairy Farms Project has been depicting the profits of 5 "model" dairies that employ a "hybrid" style system combing both grazing and confinement. Production efficiencies showed approximately 59 cows and 991,200 hundredweights of milk sold per Full Time Equivalent (FTE) laborer. Milk sold per cow averaged 16,763.

Milk produced per crop acre averaged 12,437 pounds. Even though 2009 net farm income from operations averaged $112,278, the average rate of return on assets was only 3.4%. Operating profit margin averaged 13.62% and asset turnover ratio averaged 39.38%

Lessons Learned: Since 2009 year will be the last data set for the Millionaire Model Farm Project. The goal was to allow develop dairy farm millionaires out of beginning dairy producers over a 25 year time frame. The data is on the following page. Here are lessons learned:

ISU Extension's Millionaire Model definitely works in the Midwest. Focusing on 1) management intensive grazing 2) low cost parlors and facilities 3) labor efficiency 4) crossbred cows and 5) good financial analysis, the farms have proven profitable at break-even or better even in the worst years.

With profit, there is risk. The model was set up at one acre per cow for a beginning producer which involves a substantial feed price risk. The risk is lessened with increasing acreage to two productive acres per cow. The average model farm in 2009 was 1.84 productive acres per cow. The dairies which push the acres per cow envelope lower can experience more profits in low feed price years. The dairies which push the acres per cow higher reduce risk, but also seem to reduce profits with higher machinery costs and lower labor efficiencies due to the additional cropping work.

Grazing reduces feed costs per cow but maybe not feed costs per hundredweight. The system works due to labor efficiencies, equipment and facilities costs, and manure handling and feed handling issues. The "hybrid" system still gets adequate milk production per cow thanks to attention paid to cow comfort and dry matter intakes. Do not shortchange cows with low grain feeding levels as the maintenance cost on each cow is a high cost and the more less grain fed to each cow, the more feed that goes into cow maintenance cost versus milk production.

Low cost parlors and low cost facilities work. The TRANS Iowa Low Cost Parlor Design has been proven to milk cows fast and efficiently at a small cost compared to conventional parlors. Many dairy farms can be remodeled to work for low cost systems. My advice is to be creative in what might be possible on your dairy farm and seek good advice on how to best remodel an operation more profitably.

Labor efficiency is most important. Milk production per cow and per acre are still very important. Target one million pounds of milk sold per full-time worker with raised replacements and two acres per cow.

Crossbred cows can be competitive. Grazing systems have allowed crossbred cows to express their potential. High component, smaller framed cows and better health and reproductive traits have contributed to the success of these farms. Labor efficiency is improved with crossbred cows since they are easier keepers than purebreds. Cross-breeding counteracts in-breeding but is NOT genetic progress. Use high genetic bulls.

Financial analysis is important. Sadly, most dairy producers do not know within $2 per hundredweight their total cost of production. Many producers report profits per cow that do not take into account inventory changes, unpaid labor or the opportunity cost of owned equity. Some producers are making money and not realizing it. Worse yet, many producers with positive cash flows or low debt think they are making money, but really are not profitable. The Dairy TRANS software program has assisted dairy producers focus towards higher profit levels and has become more important and could have helped many producers better cope with 2009.

All in all, these Millionaire Model Dairy Farms have proven to be profitable as four of the five have already garnered millionaire status and farm 3 has passed one-third of its way to becoming a millionaire in just 8 years and so are well on their way to becoming millionaires in less than 25 years. The Millionaire Model Dairy Farms should give great inspiration and confidence for beginning or transitioning dairy producers toward a profitable and sustainable dairy system that is environmentally and energy friendly.

This model system allows entry for beginning dairy producers and as evidenced by 2009 data, this model dairy system seems more averse to risk than confinement dairy models, though some confinement dairy operations weathered 2009 without loss. *For more information on Millionaire Model Farms consult the following table or email tranel@iastate.edu.*

MODEL Graziers 2009	Dairy 1	Dairy 2	Dairy 3	Dairy 4	Dairy 5	Average	Per Cow	
Productive Crop Acres	215	160	70	570	420	287.00	1.98	
Average Number of Cows	170	130	92	169	163	144.80		
Milk Price	12.65	12.80	12.53	15.41	15.65	$13.81		
Milk Hundred weight Equiv.	33,763	26,487	22,023	38,806	38,574	31,931	220.52	
Milk Hundredweights	29,442	21,026	16,991	23,680	29,081	24,044	166.05	
Milk Sales	$372,433	$269,163	$212,821	$364,922	$455,034	$334,875	$2,313	
Cull Cow Sales ~10-17%	$11,889	$12,001	$9,358	$7,667	$21,111	$12,405	$85.67	**22.53%**
Calf Sales	$4,040	$3,695	$1,933	$8,536	$11,031	$5,847	$40.38	
Crop Sales	$0	$0	$0	$200	$0	$40	$0.28	
Other Income	$48,683	$35,559	$26,815	$103,094	$72,051	$57,240	$395.31	
Total Cash Income	**$437,046**	**$320,417**	**$250,927**	**$484,419**	**$559,227**	**$410,407**	**$2,834**	per cwt eq.
Veterinary, Medicine	$5,284	$6,000	$4,000	$8,153	$18,674	$8,422	$58.16	$0.26
Dairy Supplies	$14,239	$15,821	$9,182	$21,553	$15,986	$15,356	$106.05	$0.48
Breeding Fees	$385	$762	$1,049	$451	$7,847	$2,099	$14.49	$0.07
Feed Purchased	$143,851	$119,741	$145,255	$110,051	$138,055	$131,391	$907.39	$4.11
Repairs	$15,417	$13,243	$4,446	$21,285	$17,078	$14,294	$98.71	$0.45
Seed, Chem, Fert	$12,944	$6,403	$5,223	$47,358	$48,407	$24,067	$166.21	$0.75
Fuel, Gas, and Oil	$8,109	$11,401	$5,972	$23,142	$8,036	$11,332	$78.26	$0.35
Utilities	$9,303	$7,652	$5,975	$10,000	$8,410	$8,268	$57.10	$0.26
Interest Paid (charged @5% across all assets and is listed as an equity charge after net farm income)								
Labor Hired	$53,648	$21,240	$15,289	$53,859	$78,128	$44,433	$306.86	$1.39
Rent, Lease and Hire	$8,750	$5,866	$24,817	$36,395	$58,523	$26,870	$185.57	$0.84
Property Taxes	$6,940	$4,000	$0	$11,702	$4,000	$5,328	$36.80	$0.17
Farm Insurance	$6,700	$6,516	$1,484	$4,447	$8,608	$5,551	$38.34	$0.17
Other Cash Expense	$18,006	$6,448	$11,437	$26,193	$26,595	$17,736	$122.48	$0.56
Total Cash Expense	$303,576	$225,093	$234,129	$374,589	$438,347	$315,147	$2,176	$9.87
Net Cash Income	$133,470	$95,325	$16,798	$109,831	$120,880	$95,261	$658	$2.98
Inventory Change	($18,455)	$4,827	$8,384	$69,412	$20,919	$17,017	$117.52	$0.53
Net Farm Income	$115,015	$100,151	$25,182	$179,243	$141,799	$112,278	$775	$3.52
Equity@	$57,112	$59,958	$13,951	$137,503	$91,085	$71,922	$497	$2.25
Return to Labor	$57,902	$40,193	$11,231	$41,740	$50,714	$40,356	$279	$1.26
Labor Earnings Per Hour	$19.30	$18.27	$3.12	$13.91	$16.90	$14.30		
Gross Income per Cwt. Eq.	$12.65	$12.80	$12.53	$15.41	$15.65	$13.81		
Gross Expense per Cwt. Eq.	$12.27	$12.79	$13.83	$15.37	$15.50	$13.95		
Net Income per cwt.	$0.38	$0.01	($1.31)	$0.04	$0.15	-$0.14		
Number of Cows per FTE Labor	61	65	61	45	61	59		
Cwts. of Milk Sold per FTE Labor	10,515	10,513	11,327	6,315	10,892	9,912		
Pounds of Milk Sold per Cow	17,319	16,174	18,468	14,012	17,841	16,763		
Productive Crop Acres per Cow	1.26	1.23	0.76	3.4	2.6	1.84		
Capital Cost per Cow	$377	$523	$197	$1,080	$795	$594		
All Labor Costs per Cow	$580	$471	$601	$555	$755	$593		
Fixed Cost per Cow (DIRTI)	$548	$706	$262	$1,301	$977	$759		
Capital Invested per Cow	$6,571	$8,267	$3,335	$15,728	$10,338	$8,848		
Net Farm Income per Crop Acre	$535	$626	$360	$314	$338	$435		
Lbs. Milk Produced per Crop Acre	13,694	13,141	24,273	4,154	6,924	12,437		
**Rate of Return on Assets	5.80%	5.02%	-4.21%	5.06%	5.31%	3.40%	*ISU Extension, 2009*	
**Rate of Return on Equity	6.13%	5.02%	-4.25%	5.06%	5.31%	3.45%	*Millionaire Model Farm*	
**Operating Profit Margin	16.39%	17.74%	-5.37%	23.28%	16.04%	13.62%	Dr. Larry Tranel, ISU Extension	