IOWA STATE UNIVERSITY
Extension and Outreach

DAIRY News & Views from the ISU Extension Dairy TEAM

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Larry Tranel


Jenn Bentley


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Planting Season on Dairy Farms

Many thought the long, cold winter would never end and as we look back to 2012 for some it was the best of years farm income wise thanks to crop prices and for some it was the worst of years thanks to feed prices.

There is much thought that these high feed and crop prices will not last forever and possibly as early as with the next crop harvest there may be some relief, barring another drought or crop disaster.

Crop Budgets

With more cover crops being utilized across the Midwest and the forecast for some significant changes in crop prices, it is becoming more important to gauge costs that are going into the various crops that we are growing on our dairy farms for both feed and for sale. Some crops might be considered that may yield less but be higher in quality or be more drought resistant. Dairy producers continue to change their cropping plans due to expansion, drought, manure and nutrient management issues, etc.

With that in mind, we wanted to make sure everyone is aware of our dairy crop budget worksheet to use for looking at the profitability of various crops we use. Please check out the Dairy Crop Budget article and spreadsheet towards the end of this newsletter

Dairy Days, Pasture Walks, and Other Meetings

It was great seeing so many of you at our Dairy Days across the state this winter. There are various meetings and a pasture walk schedule for NE Iowa inside this issue.

Sincerely,

Kevin Lager
ISU Extension Dairy Field Specialist, NW Iowa

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

Newsletter edited by: Larry Tranel

The Effects of Drought Still Not Over

Now that we've seen lots of snow this past winter and some good rains from time to time this spring, please realize the effects of the drought are still not over. We still see lingering effects in feed prices but the issues we need to be concerned about are soil moisture, and surface and groundwater levels.

The Iowa DNR is very concerned that certain areas of the state might experience water shortages, mostly in northwest and southwest Iowa that depend more on shallow wells for their water sources. However, other areas of the state might still experience problems so we need to be aware that 2013 could have some serious lingering effects from the drought of 2013.

- **First, years following drought typically are hotter and dryer than normal** according to scientific comparison data since the 1950's so not something we can just attribute to the global warming discussions. Knowing this, what might you do different in planning for your 2013 crop season or for heat abatement with your cows?

- **Second, what can you do to conserve water in your dairy operation** and help others do the same? What will you do in response if you hear there's not enough water in your locale? Who gets the water first? A lot of people tap into our rural water systems and how high will your livestock be on the list if water runs short?

- **Third, what crop insurance do you feel comfortable with** given a higher chance of a dryer than normal year?

- **Fourth, are there crop varieties or crop species (i.e. forage sorghum, sorghum sudangrass) that might be used to as an alternative crop.** Are warm season crops a consideration for your dairy?

Bottom line is 2013 has a good chance of being hotter and dryer than normal. I pray that is not the case. But, given the odds from past data, consider your water supplies, usage and conservation along with how a hot and dry summer will impact your dairy herd this year.

Larry Tranel, Dairy Field Specialist, NE/SE Iowa

ISU Extension Dairy Team
"Bringing Profits to Life"

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Inside This Issue:

Dairy Outlook Overview

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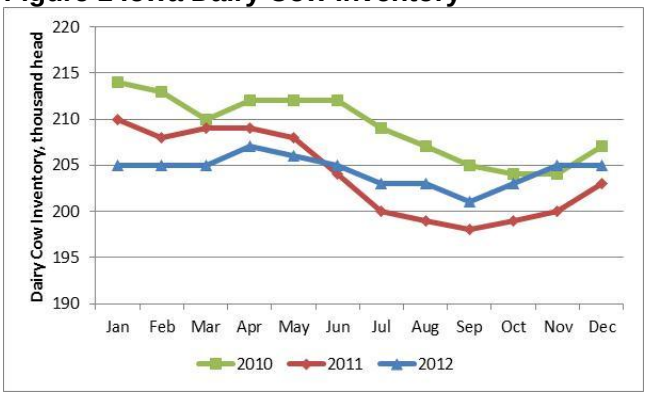
What happened in 2012?

U.S. milk cow herd closed out at 9.21 million cows, down 10 thousand head from 2011. Dairy cow slaughter increased in 2012 by six percent compared to 2011. The highest affected areas are regions which purchase a greater percentage of feed versus raising it. The Iowa milk cow herd increased two thousand cows to 205 thousand cows from 2011 to 2012. As shown in figure 1, inventory was highest at 207 thousand in April and lowest at 201 thousand in September.

Figure 1 Iowa Dairy Cow Inventory

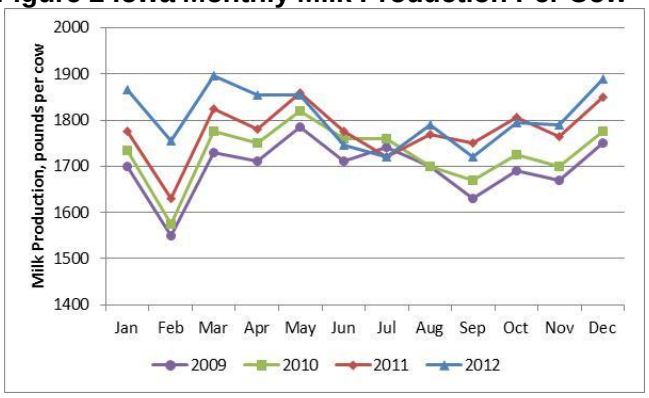


New Mexico and Arizona decreased cow inventory by 13 and 6 thousand head, respectively. However Kansas and Michigan, combined, increased cow inventory by 15 thousand cows.

U.S. milk production was up 1.62 percent; annual production for all states is 19,854 pounds per cow and 21,957 for the 23 selected dairy states. Total milk production increased in Iowa by 2.0 percent for 2012 compared to 2011. Annual milk production per cow for Iowa was 21,695 pounds, an increase of 1.74 percent or 370 pounds.

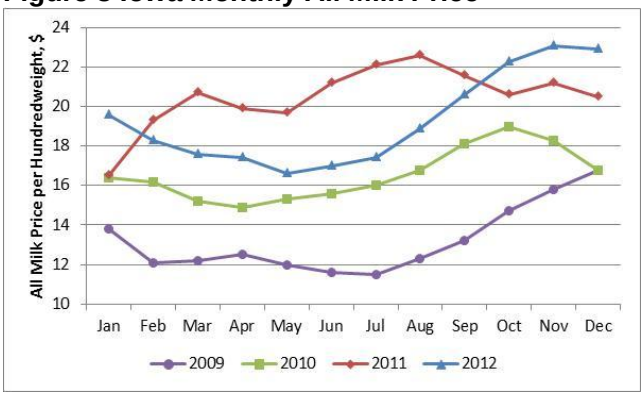
The state leader in milk production per cow increase was Wisconsin at 3.9 percent or 805 pounds. However, Texas and New Mexico decreased milk production per cow by at least 190 pounds.

Figure 2 Iowa Monthly Milk Production Per Cow



Iowa All Milk Price varied $6.50 in 2012; average All Milk Price for Iowa was $19.31. As shown in figure 3, the lowest price came in May due to growth in production in first half of the year. While the highest price at $23.10 was in November partially due to a decrease in cow inventory over the summer and fall months as a result of tightened margins and strong cull cow prices. These factors also slowed production growth which assisted higher milk prices at the end of 2012.

Figure 3 Iowa Monthly All Milk Price



Tight margins was the theme throughout most of the year due to high feed costs which stemmed from both high grain and hay prices. Factors driving feed commodity prices higher were the wide spread drought and a tight ending inventory based on expected demand and given supply.

Exports accounted for 13.6 percent of milk production on a milk-solids basis. Increased ability to meet needs of foreign buyers and increased demand from the growing middle class helped to grow exports in 2012. Global demand increased enough to absorb the gain in production in Oceania countries in late 2012. This along with the slow in U.S. milk production at the end of the year leaves most global dairy product inventories at lower levels than December 2011.

What can we expect for 2013?

The first half of 2013 is more predictable due to unknown milk and crop production factors that will come into play mid-year. Tight financial margins stemming from high feed costs will continue for at least the first half of 2013 or until the next crop harvest. The size of current crop inventory and next harvest will drive price while quality of both may affect milk production. Current conditions will contribute to slow growth in total milk production due to expected limited herd expansion and growth in milk production efficiency.

Lower milk prices are expected in early 2013 due to weaker dairy prices with the exception of dry whey. While cheese and butter product prices have decreased due to growing inventories (respective to inventory levels in prior months) at the end of the year, prices may increase in early to mid- 2013 due to expected supplier purchases. Lack of surplus in global product inventories and expected slower growth in milk

production will provide as positive factors for milk prices in mid- to-late 2013. Additionally, growth in dairy product demand from growing middle class and continued strength from Mexico for export products (SMP and cheese) will support milk prices throughout 2013 for U.S. producers.

What is unknown for 2013?

The last half of the year is highly questionable for dairy producers due to questions surrounding weather variability, volatility in markets, and state of foreign market economies.

Questions at the producer level surround feed and milk output. How will feed quality and quantity harvested in 2013 affect overall milk production? Will producers continue to more efficient with feed quality harvested or alternative feed sources? Historically, producers have increased milk production with culling cows and heifer replacements and making necessary ration changes. The weather, feed commodity price volatility, and cow management will help determine growth in milk production for 2013. Additionally, the level of global milk production growth and product demand will affect product and milk prices.

Recently, weather has played a factor in driving the current feed prices. In addition to the drought across the Corn Belt, dry weather patterns in the South America are affecting the grain crop growing season which will further affect corn and soybean prices.

Economic stability in foreign countries also factor into the strength of the US dairy industry due to related value of the dollar and dairy exports. The European Union economy is expected to be in a state of recession while the US is expected to recover in 2013, all while China's economy is expected to continue to grow.

What can you do to prepare for uncertainty?

An operation's financial stability going into 2012 and percent of feed purchased versus raised will help to determine the financial sustainability of farms surviving a period of lower milk prices. With tight margins expected for early 2013, it is important to know how long your dairy operation can financially withstand low margins. This can be determined by doing complete financial analysis and 'what if' scenarios. These scenarios evaluate what amount of change in revenue decline, expense increase, and interest rate increase can an operation withstand before being in a negative financial position. This can help understand how market volatility in the coming year could impact their operation's feasibility to remain in production. Additionally, it can allow operators to be proactive in planning for and working with their financial team to create a plan to survive a time of low margins.

Additionally, with higher feed costs, it is important to calculate cost of production on a per hundredweight of milk produced. This value can help producers evaluate financial margins, feed costs, and appropriately make milk or feed marketing decisions. Although milk prices seem high relative to years past, high feed costs require producers to continue to become better financial managers.

Water Conservation on Dairies

Dan Huyser, ISU Extension Agricultural Engineer,NE Iowa

Water is very important to a dairy facility. After last year's drought, water use could become an issue on some farms. While it isn't possible to make it rain to replenish water supplies, it is possible to conserve what is available. One of the first things to do is to stop any leaks. A fast dripping faucet can use considerable water over time. The U.S. Geological Survey came up with 15140 average drips in 1 gallon of water. Multiple leaking faucets can use water faster than most people will realize.

Toilets in restrooms should be checked. Leaking flush valves or fill valves that won't shut off can waste more water than a dripping faucet. Many times these leaks aren't heard. Other times you know there is a leak when the toilet fill valve refills the toilet when it hasn't been used.

Leaking water tanks and overflowing waterers should be easy to detect and repair. If a tank is sitting on a lot and there is a mud hole around it, the float level may be too high. Any time there is excessive water on the floor or ground due to cows slopping water, it might be worth looking into setting the water level down a little to reduce it. Care should be taken to not set the level down too far and prevent stock from getting enough water on a hot day.

Scraping cow areas before hosing them down will speed clean up as well as save water. Reducing the number of floors hosed down and scraping instead will help. While areas such as holding pens are nice to be hosed down, eliminating or minimizing them from the routine saves water for other purposes.

Facilities that have sprinkler systems for heat relief may have to limit use to only the hottest times of the day or the hottest days. Adding additional fans to those already there may make up for some of the lost benefits of the water.

Providing shade for animals on outside lots benefits both the livestock and the water supply. It has been shown that an animal standing in the sun will feel 15-20 degrees more heat than one standing in the shade. The cooler cows are going to be more comfortable and require less water than the ones exposed to the sun.

While it is easier to have an unlimited water supply, conserving the existing resources can be done without causing too much inconvenience.

Dairy Farm Employee Management: Put Job Descriptions to Work

Do you become aggravated with employees who simply do not seem to know what they are supposed to be doing? Have you ever had high hopes for a new employee who just did not last on the job because they did not understand what was expected of them?

Whether your dairy farm has two employees or twenty-five, the effective development and implementation of job descriptions might be a tool that could be put to good use on your dairy farm. Job descriptions help workers know what is expected of them and serve as a fundamental basis for employee communication and development.

Job descriptions summarize the overall function of a position, and detail the qualifications and duties expected of the employees. While developing job descriptions might seem like just one more thing to do on the dairy farm, there are significant benefits to consider.

Recruitment: When you have taken the time to analyze the essential duties of a position, you are more likely to recruit appropriate applicants. If you are looking for an employee with experience in hoof trimming, heat detection, artificial insemination, or computer skills, you will identify these needs if you have job descriptions for the positions on your farm. This will help to attract applicants who have the skills you seek.

Hiring and Selection: A good job description is an essential aid in the interviewing and selection process. During the interview, you can go over the necessary qualifications and duties of the position with each applicant, asking about training and past experience. This serves to keep you on task as you interview, compare and evaluate job applicants.

This process also serves to communicate with potential employees what will be required of them. The applicant receives guidance on what will be expected of them and gives the applicant keys on questions that need to be asked. Because you have reviewed the requirements of the position with applicants, you are likely to make a better new employee selection.

Training and Employee Development: All new employees need job orientation and training. When you have reviewed the requirements of a position with a new employee, you have a good idea of the individual's past experience and well as the training needs for that new employee. Similarly, as experienced employees move into more advanced work, you can continue positive training and employee development experiences. This increases employee satisfaction and productivity.

Evaluation: All employees like to know what is expected of them, and whether they are meeting expectations. Properly developed job descriptions are tools that can be used in the employee evaluation process. By reviewing the elements of the original job description – and combining these with performance criteria – both you and the worker can periodically determine whether expectations are being met and where improvement or additional training is needed. You will also evaluate whether the employee's actual duties have changed or evolved over time. This is a also a good time to update position descriptions.

Communication: As indicated, the job description is a good tool for communication between employer and employee. However, it also aids communication among employees. When all employees understand their job duties, they have a better idea of where they fit into the overall operation, and how they relate to one another.

Organizational Development: Your dairy farm is a growing, developing organization – whether you always think of it that way or not. Taking the time to analyze your labor needs and develop job descriptions is a huge step in helping your dairy farm to be a more efficient, effective and profitable business.

Your dairy farm operation will run more smoothly when you and your employees understand their role on the farm. Just like players on a well-coached football team, employees who understand their role in the organization are more likely to work as a team.

Job descriptions are just one more of the tools that help a dairy farm become a smoother operation. When staff people understand their jobs and relationships on the farm, it is easier to work toward excellence because everyone knows who is responsible for what tasks.

Now that you have been convinced to take the time to develop job descriptions, it would be helpful to know how to go about the analysis and assembly. That will be the topic of our next employee management article. In the meantime, you might want to take a look at this publication from the University of Nebraska Extension on "How to Write a Dairy Job Description"

www.ianrpubs.unl.edu/pages/publicationD.jsp?publicationId=692

As always, feel free to contact Melissa with any of your farm employee management questions.

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Spring Manure Issue for Dairies

Angela Rieck-Hinz, Extension Program Specialist, Iowa State University, amrieck@iastate.edu, 515-294-9590

Spring is often a sloppy, wet, muddy scene on an Iowa dairy farm. While pastures may be greening up with the sun and moisture, snowmelt and rain runoff from cow yards and farmsteads can cause some challenges for manure management. This is the time of year you should consider spending some time doing a self assessment of your cow yards, manure storage structures, stockpiles, manure loading areas and feed storage areas to make sure that manure nutrients and effluent from feedstuffs is not reaching a state water.

There are several resources available to help with a self- assessment, but often just walking below cow yards, manure stockpiles and feed storage areas can help you determine if you have a potential problem that could lead to a water quality violation.

The following publications are part of the Farm*A*Syst series developed by the Iowa Farm Bureau and the Iowa Department of Natural Resources. Links to the on-line version of these publications are provided for you use. If you don't have access to the Web, please contact me or your local ISU Extension and Outreach Dairy Team member and we will mail you a copy of the requested material.

Assessing Your Open Feedlot Manure Management
http://www.iowafarmbureau.com/files/pages/194/EDC267.pdf
Assessing Your Milking Center Wastewater Management
http://www.iowafarmbureau.com/files/pages/194/EDC269.pdf

Another tool is the Feedlot EMS worksheet, created by the Iowa Beef Center at Iowa State. Although this was written for beef production, the worksheet is very applicable to dairy farms where cows are housed outdoors. It can be accessed at: http://www.iowabeefcenter.org/Docs_environment/Feedlot_Assessment_Worksheet.pdf These tools allow producers to evaluate their own situation, under a variety of climatic conditions and provide the opportunity to make improvements to protect water quality in a confidential manner. The tools can also be used by a third-party to assist producers in identifying areas of concern.

Best Management Practices

Dairy producers should employ all best management practices to reduce off-site movement of nutrients from cow yards, manure stockpiles and feed storage areas. Divert clean water from entering the cow yard or open lot with use of gutters for roofs, or terraces or clean water diversions for surface water. Scrape lots frequently to avoid a build-up of manure solids. Carefully locate stockpiles and mortality compost piles to prevent runoff. (Know the stockpiling regulations). Keep feedstuffs dry. Prevent runoff of silage effluent Clean-up spilled manure, feed, silage and bedding.

Additional Resources

There are many good resources available on manure management for dairy producers. Here are some resources for Iowa dairy producers.
Open Feedlot Manure Stockpiling Regulations
http://www.iowadnr.gov/Portals/idnr/uploads/afo/files/Open%20Feedlot%20Stockpiling%20FS%20Final.pdf

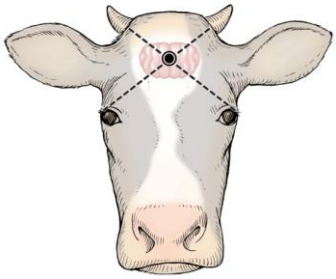
Small Open Lot Dairies in Iowa- a producer guide
http://www.agronext.iastate.edu/immag/pubs/PM3019openlotdairies.pdf

Testing the Waters: A beef and dairy producers' guide to water quality below open lots
http://www.agronext.iastate.edu/immag/info/testingthewaters.pdf

Proper Euthanasia

The FARM (Farmers Assuring Responsible Management) program dictates that all herds have a plan for dealing with terminally ill or injured animals. This plan should include clear guidelines on when euthanasia should be considered, who will perform the procedure and how.

The anatomical landmarks for conducting this procedure by gunshot or captive bolt are as follows: In cattle, the point of entry of the projectile should be at the intersection of two lines, each drawn from the outside corner of the eye to the base of the opposite horn. The firearm should be positioned so that the muzzle is perpendicular to the skull to avoid the possibility of ricochet. Proper positioning of the firearm or penetrating captive bolt is necessary to achieve the desired results.



Firearms recommended as good choices for conducting euthanasia of cattle include: handguns (.32 - .45), shotguns (12, 16 and 20 gauges) loaded with BB shot or slugs and rifles (.22 magnum or higher). Solid point bullets are preferred since the hollow points are unlikely to consistently penetrate the skull due to fragmentation on impact with the animal's head.

Further information on these techniques may be found at the following web site:
http://vetmed.iastate.edu/**HumaneEuthanasia**

by Jan Shear, DVM, ISU Extension and Outreach

Fall Forage Rye for Dairy Heifers and Dry Cows

Editor's Note: due to the increase use of cover crops such as winter rye, please note the comments bolded within the article as we are following a very dry year.

Many dairy and heifer rearing operations are looking for increased feed production on a limited acreage for their operation. Planting fall grain rye and harvesting the crop as forage the following spring can increase forage yield per acre and reduce forage production costs. Double cropping fall grain rye following soybean or early corn silage harvest is a viable agronomic practice in most regions in Wisconsin (and Iowa).

Research and demonstration data does show however, that earlier planted rye will produce more tonnage per acre the following spring. If the fall harvest of soybean or corn silage is delayed and planting is delayed, reduction in spring forage yields can be expected. Spring harvested ryelage can be fed to heifers and dry cows, and early harvested ryelage often contains 15% protein and is suitable for lactating dairy cows.

Why produce fall grain rye for forage?

Planting winter rye varieties in the fall has several advantages as a forage o feed heifers and dry cows.

● It is a hedged emergency forage crop if alfalfa suffers winter kill.

● Winter rye varieties will grow later into the fall and earlier in the spring, so it extends the normal growing season and thus captures more sunlight and converts that energy into forage energy for livestock.

● It provides dairy operations with a forage for dairy heifers and dry cows that will lower the TDN in the ration. Feeding forages with less energy will help keep dairy heifers and dry cows from getting too fat.

● For grazing operations, if winter rye varieties are planted early enough in the fall, lactating cows and heifers can make one or two grazing passes over the field extending the grazing season. The following spring, rye can be the first grass grazed and then plowed under for green manure for a subsequent spring planted crop.

● Rye allows manure application in the fall before seeding and again just after harvest in May or June.

When is fall grain rye planted?
Fall grain rye can be planted any time after September 1 and as late as early November depending on weather conditions. Fall seeding rye typically follows soybean or corn silage harvest. A typical seeding rate is 90 pounds/acre, however some producers may choose to plant up to 120 pounds/acre to try to increase forage yield. Another option is to reduce the rye seeding rate to 70 pounds/acre and inter-seed alfalfa in the spring with a no-till drill. If no manure is applied, 40-60 pounds of topdressed nitrogen/acre is recommended in the spring. An application of manure in the fall prior to planting will usually supply adequate nitrogen and other nutrients for optimum forage yield.

What is the yield of fall planted rye?

Generally, fall grain rye will yield 2-3 tons of dry matter with the range of 1-4 tons of dry matter per acre. Optimum harvest timing is in the boot stage. Adequate moisture and hot days cause rye to mature rapidly in the spring, which may shorten the harvest window. An advantage of using fall seeded rye forage for dairy heifers and dry cows is that the range of maturity and the harvest window become longer because lower protein and higher fiber are still acceptable in heifer and dry cow rations.

What is the nutrient composition of fall grain rye forage?

Delaying harvest of fall grain rye in the following spring will reduce protein and increase the fiber content of the forage. A rule of thumb is if the rye is harvested at boot stage, the forage will have a protein content of over 15%. As a result, a mixture of 50% ryelage and 50% corn silage would be adequate to meet the protein requirement of bred dairy heifers (13 %). If the rye is harvested later, the protein may be as low as 10%. Thus the diet may require additional legume silage or protein supplement to meet the protein requirement of dairy heifers and dry cows.

Late harvested rye is advantageous in some feeding situations when forages are required to reduce the energy intake of dairy heifers and dry cows. Finally, rye forages may have a high potassium content which may be a concern in dry cow rations. Typical nutrient composition ranges of spring harvested rye forage are presented in Table 1.

Table 1 Nutrient compositions of spring harvested rye .

	Average	**Range**
Yield D.M.Tons/acre	2.37	1.34 – 3.88
RFQ	180	149-205
CP %	16.2	9.5 – 17.5
ADF %	27.6	24.6 – 31.4
NDF %	52.2	47.2 – 66.0
P %	0.39	0.29 -0.48
K %	3.05	2.10 – 4.37

What are the planting options after winter rye?

Most planting options are available to producers, depending on how early winter rye is harvested in spring. Corn, soybean, alfalfa, and alfalfa/forage grass mixtures have all been successfully established. An

earlier maturing corn hybrid may need to be planted if rye harvest is delayed into late May or June. No-till is a preferred planting method if the seedbed is in good condition, but tillage may be needed if the field was wet during harvest or manure needs to be incorporated. Some rye will likely regrow from the stubble, but this can be controlled with glyphosate grass herbicides, or mowing.

Relative to replant options there are a couple of issues that should be known. **First, rye has an extensive root system and the capacity to deplete available soil moisture in years where rainfall is short either before or after rye forage harvest. Keep this in mind as planting options are considered in a dry year. It's best to harvest earlier rather than later under such conditions.**

Severe armyworm infestations are a potential problem in corn following winter rye as the cereal forage is an attractive site for moth egg-laying in the spring. Keep a close eye on the developing corn crop and control any rye regrowth as soon as possible.

What other issues pertain to fall rye forages?

The Natural Resources Conservation Service (NRCS) through the Environmental Quality Incentives Program (EQUIP) program may have cost-share funding to support efforts of dairy producers and heifer growers to use fall grain rye as a cover crop. Fall seeding of rye after soybean or corn silage harvest is an effective management practice to control soil erosion, recycle nitrogen from the previous crop, provide some weed suppression for the following crop, and develop a large root system that will improve soil texture the following year as the root system decomposes.

Ergot, a fungal disease, is a concern in rye grain production. Rye forage is harvested in boot or early head stage, before pollination and infection can occur. Therefore, ergot is not a concern in rye forage, but skips and regrowth should be monitored if a forage crop is planted after rye.

Summary

As dairy operations and heifer growers look for alternative crops to feed their heifers and dry cows, fall grain rye is a unique niche forage. Rye planted in the fall for forage provides a way to extend the growing season, is a flexible forage for various groups of animals, is an excellent cover crop, recycles nitrogen, suppresses weed growth, and is a hedge emergency forage crop in cases of alfalfa winter kill.

by Zen Miller, Mike Bertram, and Pat Hoffman
University of Wisconsin-Extension,
Focus on **Forage** - Vol 12: No. 4 Page 2

Upcoming Events

2013 PASTURE WALKS in NE Iowa, 1-3 pm

May 22 -- Dan Specht, 12749 Pleasant Ridge Rd. McGregor, IA Grazing fall seeded cover crop of rye/hairy vetch before organic corn planting. Light lunch sponsored by Practical Farmers of Iowa

June 28 -- Jeremy and Jodi Peake, 323 N Line Rd. Waukon, IA Assessing pasture management near trout stream. Guest speaker, Dave Vetrano, retired DNR fisheries biologist.

July 17-- **Phil Specht**, 28304 Pleasant Ridge Rd. McGregor, IA Featuring new watering system to graze 120 dairy cows on an intensive grazing system

September 18 -- **Phil Wille**, 27425 Killdeer Avenue Garnavillo, IA Grazing dairy with improved lane system

Robotic Milking and Low Cost Parlor Tours

June 17th and 18th, NW Iowa Locations to be determined.

Western Iowa Dairy Alliance Open House

June 26th at Multi-Rose Jerseys in Rock Rapids. For more information check out: http://www.wiadairy.com/

Master Hoof Care NE Iowa Dairy Center

The Master Hoof Care Program is a hands-on training program for instruction in hoof care and trimming. The Program is a half day of lecture and the remainder is lab/live cows. The program includes understanding the names of various foot disorders and how to treat them.

The class meets Wednesday, May 15 through Thursday, May 16 from 8:30am -5:00pm at the Iowa's Dairy Center in Calmar. Tuition is $549. Registration deadline is May 1st at 800-728-2256, Ext. 399 or 380 or register online at www.nicc.edu/solutions.

Milking Systems Can Be Viewed On-Line

Want to watch what we think is one of the most labor and cost efficient, ergonomically correct and safest parlor for milking cows? Check out our YouTube videos of a dairy farm near Maynard, IA. See the milking routine and chop gates and the "cow psychology" at work with one person milking 70 plus cows per hour, alone in a Swing 15 **TRANS Iowa Low Cost Parlor**.

Then, for the **Robotic Milking** Enthusiasts, check out the YouTube video and interview with the late Sandra Erhardt and the robot on their dairy. The Robotic milking and low cost parlor videos can be found at: https://www.youtube.com/user/ISUExtensionDairy/featured

4-State Dairy Conference June 12-13th

Grand River Center, Dubuque *Register:608-223-1111*

Wednesday, June 12th Pre-Conference Session

- Protein Does WHAT?!? Protein Effects On Rumen Fermentation, *by Dr. Mary Beth Hall*
- Effects of SiloSolve inoculants on silage quality, dairy performance, and production efficiency, *by Dr. Christer Ohlsson*
- How I measure & utilize feed intake data: *Nutrition consultant panel; Dr. Marty Falder, Keith Sather, Jim Barmore*

4-State Conference General Session

- Updates to approaches to reduce nitrogen intake and improve N efficiency of use in dairy cattle, *by Dr. Mike Van Amburgh*
- Panel on low protein feeding: *Dr. Mike Hutjens (Moderator), Dr. Steve Woodford, Dr. Dave LaCount, John Koepke*

Breakout Sessions: Pre-weaning nutrient intake and health in dairy calves and long-term impacts on productivity; Feeding the Organic Dairy Herd During 2013 and Beyond; Metabolic profile of transition cows; 3-R Transition Period: Recovery, Reproduction, and Results; Forage Substitutes & Byproducts: Feeding Cows When Forage Is Scarce & Corn Is High; Heat Stress

Thursday, June 13, 2013 Breakfast Session

Troubleshooting Mixed Rations, *by Jeff Weyers*

4-State Conference General Session

- Precision Feeding Heifers, *by Dr. Jud Heinrichs*
- On-farm genomics testing and dairy cattle replacement decisons, *by Dr. Albert De Vries*
- Heifer Feeding Realities, *by Ron Holty*

Breakout Sessions: What does it cost to raise a heifer?; Economic implications of stocking density; Dairy Policy & Directions; Sickness Behavior in Dairy Calves; Potential role of serotonin during the transition period; Rumen protected choline: an essential nutrient that is deficient in transition cows.

Precision Feeding Dairy Heifers

Jennifer Bentley, Dairy Specialist,
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If you are short on forage, consider limit feeding heifers. This involves feeding a higher energy diet than common with free-choice forages, but limiting the total amount of feed offered, thus controlling average daily gain. Researchers in Wisconsin and Pennsylvania have looked at this practice where heifers are fed a higher concentrate diet that is limit fed as opposed to the more traditional approach of free choice feeding forages and supplementing with a limited amount of concentrate.

The heifers will be very vocal for the first week or two after implementing this feeding program, but once they adjust, growth performance in respect to weight gains and structural growth is not reduced.

Other potential advantages of a limit feeding program are:

- Reduction in total feed costs for rearing heifers, increased feed efficiency (lb. of feed to get a lb. of gain)
- Less manure produced
- Greater opportunity to include by-products and lower quality feeds
- Selection of feedstuffs based on cost, availability and nutrient composition

Corn and soybean meal are most common sources of protein and energy, however there is an opportunity to incorporate other by-products. Because there are a wide variety of feed ingredients available for ration formulation, a standard set of recommendations is not yet available.
Here are a few example rations formulated for lower and higher forage levels and two age groups for an ADG of 1.8 pounds/day.

Ingredient, % of DM	Lower Forage		Higher Forage	
	4 Months	23 Months	4 Months	23 Months
Grass Hay	8	15	20	25
Corn Silage	12	25	30	35
Whole Shelled Corn	40.75	31.25	18.70	18.25
Soybean Meal	9	0	8	3
Distiller's Grains	7	15	10	10
Wheat Middlings	10	10	5	5
Molasses	10	0	5	0
Urea	0.50	0.75	0.30	0.75
Mineral Mixture	3	3	3	3

There are some basic guidelines when considering precision feeding dairy heifers:

- Balance the rations to meet the NRC requirements for the heifers
- Feeding these animals the same time everyday becomes important
- Control variation in size of heifers within the group (limit range to within 200 lb)
- Heifers will need 14-24 inches of feed bunk space per heifer from 4 months of age to pre-calving, remember heifers will not have access to feed at all times of the day
- Avoid using straw or shavings for bedding
- Transition from free-choice forage feeding to a limit feeding program gradually
- Stop limit feeding and adapt heifers to pre-fresh ration 30-45 d before calving.

Transitioning heifers to a pre-fresh diet about 30-45 days prior to calving is recommended and showed no adverse effects on calf birth weight, dystocia, metabolic problems, dry matter intakes or milk production. Changes in rumen and gut volume have been shown to occur rapidly and do not limit postpartum dry matter intake.

Dairy Crop Budgets and Profits *by Larry Tranel and Kristen Schulte, ISU Extension and Outreach Dairy Team*

Crop prices and crop inputs costs have changed a lot in recent years so below you can find our most common dairy crop budgets to cross compare with each other as you consider various cropping strategies in the coming years. Corn silage still seems to be king and alfalfa and rotationally grazed, high quality pastures are still competitive even when land costs (rent) are equal across the various crops. As dairy producers work with us to run their own numbers through, they are often surprised but also glad to know what it is costing them to produce the various feedstuffs on their dairy operation. Simply let us know if you would like us to assist you with budgeting various crops for your dairy. **Your budget numbers are the most important ones to consider, especially with land rental or ownerships costs and yields so variable across the state.**

Dairy CROP BUDGETS PER ACRE[1,2]												2013
	Alfalfa			Corn for Grain			Corn Silage			High Quality Pasture		
Incomes	Unit	Value	Total	Unit	Value	Total	Unit	Value	Total	Unit	Value	Total
Sales	6	$175.00	$1,050.00	185	$5.75	$1,063.75	22	$57.50	$1,265.00	4.25	$175.00	$743.75
Other	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Expenses	Unit	Value	Total	Unit	Value	Total	Unit	Value	Total	Unit	Value	Total
Lime	0.3	$40.00	$13.20	1	$9.67	$9.67	1	$10.50	$10.50	0	$0.00	$0.00
Nitrogen	0	$0.00	$0.00	186	$0.58	$107.88	150	$0.58	$87.00	100	$0.58	$58.00
Phospate	78	$0.48	$37.44	69	$0.48	$33.12	84	$0.48	$40.32	30	$0.48	$14.40
Potash	300	$0.50	$150.00	56	$0.50	$28.00	192	$0.50	$96.00	40	$0.50	$20.00
Sulfer/Micronutrients	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Manure	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Seed #1	5	$4.12	$20.60	35	$3.64	$127.40	35	$3.64	$125.58	1	$10.00	$10.00
Seed #2	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Insecticide	1	$0.00	$0.00	1	$19.00	$19.00	1	$19.00	$19.00	0	$0.00	$0.00
Herbicide #1	0.3	$15.10	$4.98	1	$25.00	$25.00	1	$25.00	$25.00	0	$0.00	$0.00
Herbicide #2	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Pest Scouting	1	$8.00	$8.00	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Fertilzer Spreading	0.3	$3.50	$1.16	1	$10.00	$10.00	1	$10.00	$10.00	1	$3.50	$3.50
Spraying	0.3	$4.00	$1.32	1	$4.00	$4.00	1	$4.00	$4.00	0	$0.00	$0.00
Plowing/Chiseling	0.3	$13.40	$4.42	1	$14.20	$14.20	1	$14.20	$14.20	0	$0.00	$0.00
Disking/Cultivating	0.3	$3.90	$1.29	1	$6.70	$6.70	1	$6.70	$6.70	0	$0.00	$0.00
Planting	0.3	$8.80	$2.90	1	$11.40	$11.40	1	$11.40	$11.40	0	$0.00	$0.00
Combining	0	$0.00	$0.00	1	$32.00	$32.00	0	$0.00	$0.00	0	$0.00	$0.00
Mowing/Conditioning	1	$30.30	$30.30	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Raking	1	$19.20	$19.20	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Baling	1	$90.50	$90.50	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Chopping	0	$0.00	$0.00	0	$0.00	$0.00	1	$46.10	$46.10	0	$0.00	$0.00
Hauling/Handling	1	$34.50	$34.50	1	$31.58	$31.58	1	$78.48	$78.48	0	$0.00	$0.00
Drying	0	$0.00	$0.00	28	$1.60	$44.77	0	$0.00	$0.00	0	$0.00	$0.00
Gas/Fuel/Oil	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Repairs	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Crop Insurance	1	$5.50	$5.50	1	$27.00	$27.00	1	$24.50	$24.50	0	$0.00	$0.00
Interest	0	$0.00	$0.00	1	$14.51	$14.51	1	$16.24	$16.24	0	$0.00	$0.00
Land Cost	1	$300	$300.00	1	$300	$300.00	1	$300	$300.00	1	$300	$300.00
PropTaxes	1	$20.00	$20.00	1	$20.00	$20.00	1	$20.00	$20.00	1	$20.00	$20.00
Misc Other	0	$0.00	$0.00	1	$10.00	$10.00	1	$9.00	$9.00	1	$10.70	$10.70
Labor&Management	4.3	$12.25	$53.04	2.9	$12.25	$34.91	5	$12.25	$61.25	1.5	$12.25	$18.38
Depreciation	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00	0	$0.00	$0.00
Total Income			$1,050.00			$1,063.75			$1,265.00			$743.75
Total Expense			$798.35			$911.14			$1,005.27			$454.98
Net Per Acre			$251.65			$152.61			$259.73			$288.78
Cost Per Unit		$133.06 per ton			$4.93 per bushel			$45.69 per ton			$107.05 per ton	

[1] assumptions for cropping operations based on Estimated Costs of Crop Production and Machinery Costs

[2] assumes budget period covers all field work, harvesting, and storage costs

Authored by Larry Tranel and updated by Kristen Schulte, ISU Extension and Outreach Dairy Team

Stall Surfaces—Is Sand Still the Gold Standard?

Comfortable cows tend to be more profitable. Currently, producers tend to use sand, mattresses or waterbeds for stall surfaces. These bases can all be successfully used with proper bedding management. Each has their benefits (effect on cows) and associated costs over time that need to be evaluated. Dairy cows prefer surfaces with more cushion. Surface cushion can be improved by significant additions of bedding, but properly sloped stalls have difficulty retaining significant amounts of bedding. If significant bedding is used to increase lying times, bedding bacterial counts and udder health require frequent removal of bedding.

Sand, properly managed, is still the gold standard due to its ability to help cows, especially lame ones, traction and cushion for rising and lying. Sand also has hygiene improvements with udders 50% cleaner (Cook and Nordlund, 2004). However, some research reported no difference in milk production or SCC with sand or mattress stalls (Bewley et al., 2000; Fulwider et al. 2007). But, we know there is a relationship with cleanliness and there is a stronger relationship between SCC and hind limb hygiene than between SCC and udder hygiene (Reneau, 2005). Sand appears to act as a cleaning agent, removing manure from the legs, udder and flanks (Cook and Nordlund, 2004). Thus, sand gets the edge in the debate of cow cleanliness and SCC. Cows on mattress stalls tend to have more hock and other lesions than cows on sand or waterbeds (Fulwider et al., 2007). Sand bedded cows have more dorsal lesions (below hock) than cows on mattresses or waterbeds likely due to the abrasion of concrete curb (Fulwider et al., 2007.) Curb width should not be considered as part of the stall length in sand stalls which can cause an unfair comparison in stall length studies. Please consult the spreadsheet on page two for advantage considerations for deep sand bedded stalls.

Stall length is correlated with lesions across all stalls. **Stall width** also has some correlation with lesion score 3 (Fulwider et al., 2007). Hygiene scores are correlated with neck rail height for mattress stalls but not sand stalls (Fulwider, et al. 2007). Though this same research shows no significant difference between base types for percent lame or annual death rate, waterbed dairies had more mature cows in fourth lactation or greater. Producers who provided waterbeds for their cows were more satisfied with longetivity than mattresses or sand. Producers who provided sand or waterbeds were more satisfied with lameness prevalence than those with mattresses. Satisfaction with manure management was highest for mattresses or waterbeds when compared to sand. However, this author feels that two-stage sand laden manure handling systems on several Iowa farms may significantly increase the satisfaction levels of producers using sand. In addition, newer mattresses like the Pack Mat™ which is designed as a mattress with 2” of sand over the mattress can assist in saving sand use while still achieving the lying time benefits of deep sand for lame cows (Marin S. et al., 2007). Extra foam padded mattresses may also increase milk production and cow comfort and need further consideration.

The greatest effect of poor stall design may be on lame cows within a given herd. Cook et al. (2004) demonstrated how lame cows housed in barns with rubber crumb filled mattress freestalls stood longer in the stalls—two or three times longer than non-lame cows, depending on the severity of the lameness, and lay for less time than non-lame cows. In contrast, lame cows housed in similar barns with deep bedded sand stalls showed no significant change in stall use behavior. We have suggested deep sand facilitates the rising and lying movements of lame dairy cows, allowing them to maintain normal stall resting times in excess of 12 hours/day. This may explain, at least in part, the much lower prevalence of lameness observed in sand stalls compared with mattress stalls (Cook, 2003; Espejo et al., 2006). Mattress products tend to harden and lose cushion over time.

Stall design is as or more important than stall base. Stall length, width, base cushion effects, neck rail, physical and social obtrusions, etc. all effect the traction, rising and lying behaviors of cows. Please consult up-to-date Extension resources for current stall design. In open front head-to-head stalls with properly designed neck rails (high) physical obstructions to lunging forward should be avoided. If felt necessary, a deterrent wire covered in polypropylene tubing mounted 40-42” above the stall surface so above the “bob” space but not solid enough to cause injury to the cow should she venture beneath it. (Cook, Nordlund, 2004).

Conclusion

Sand is still the gold standard due to its ability to help cows, especially lame ones, traction and cushion for rising and lying. New technology for sand laden manure systems may improve producer satisfaction for handling sand laden manure. Other stall bases that can achieve sand stall properties for comfort can and have been as successful. Proper stall design is also a very important factor. But, when put together, a well designed and managed sand freestall provides the optimal resting space for dairy cows.

If you would like to run the following partial budget for your dairy to consider the economic benefits of sand, please contact your dairy field specialist. *by Larry Tranel, ISU Extension Dairy Field Specialist, NE/SE Iowa*

Page 2. Budget Considerations for Converting Mattress Based Freestalls to Sand Based Freestalls

The following partial budget (top part) assists in the decision making process by outlining the variables at play when deciding whether or not to convert a mattress barn to sand stalls. The bottom portion allow for input of Herd Assumptions on the left along with Instructions or reference values on the right for typical responses to variables. Those variable feed into the partial budget on top. It is pretty typical to have a payback of < two years as shown.

Partial Budget - Mattress to Sand Conversion

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The Dairyland Initiative

Fill in the BLUE cells in the Assumptions table below

POSITIVE IMPACTS		NEGATIVE ECONOMIC IMPACTS	
Increased Income		**Increased Costs**	
Improved milk production	$ 122,640	Increased feed costs	$ 42,158
Improved SCC premium	$ 14,007	Amortized cost of stall modifications	$ 3,561
		Amortized cost of manure system modifications	$ 42,731
		Cost of sand bedding	$ 25,550
Total Increased Incomes	$ 136,647	Total Increased Costs	$ 114,000
Reduced Costs		**Reduced Incomes**	
Reduced number clinical mastitis cases	$ 5,022	Reduction in cull cow sales	$ 10,800
Reduced number of lameness treatments	$ 3,413		
Reduced cost of replacement heifers	$ 25,200		
Reduced cost of bedding on mattresses	$ 61,320		
Total Reduced Costs	$ 94,955	Total Reduced Incomes	$ 10,800
Total Positive Impacts	$ 231,602	**Total Negative Impacts**	$ 124,800
		NET ANNUAL IMPACT	$ 106,802
		YEARS FOR PAYBACK =	**1.83**

Herd Assumptions		Units	Instructions or reference values
Herd size	300	# cows	*Enter herd size*
Number of stalls	280	# stalls	*Enter # stalls*
Current bedding usage	10	lbs/stall/day	*Estimate organic bedding use at 5-15 lb per stall per day*
Cost of current bedding	120	$/ton	*Typical range $50-250 per ton*
Anticipated sand usage per stall per day	50	lbs/stall/day	*Typical range 30-80 lb per stall per day*
Cost of sand bedding	10	$/ton	*Typical range $7-14 per ton*
Milk price ($ per lb)	$ 0.16	$ per lb milk	*Typical range $0.12-0.18*
Lbs TMR dry matter per lb of milk	$ 0.55	lb DM/lb milk	*Expected range 0.5-0.6*
Cost per lb of TMR dry matter	0.10	$ per lb DM	*Typical range $0.085 to 0.11 per lb of TMR dry matter*
Lbs of milk per cow per day, past yr	75	lbs	*Enter lbs milk per cow per day, past year*
Projected change in milk per cow per day	7	lbs	*Usual response 5-9 lbs per cow per day*
	82	lbs	*Projected milk yield per cow per day*
Milk production		2351	lbs, estimated change in milk yield per cow per year
SCC premium per 1,000 SCC reduction	$ 0.003	$/cwt	*Estimate from creamery rates, usually $0.002-.004/cwt per 1,000 SCC*
Current annual bulk tank average SCC	260,000	scc/ml	*Enter annual average bulk tank SCC*
Estimated % reduction in SCC	20	%	*Expected reduction of 15-25%*
	208,000	scc/ml	*Projected SCC after change*
Bulk tank SCC		52,000	reduction in herd average SCC
Direct cost of a case of clinical mastitis	$ 90	$ per case	*Enter average cost of treatment*
Current clinical mastitis rate, %	62	cases/100 cows	*Enter average # of clinical cases per 100 cows per year*
Estimated reduction in clinical mastitis rate	30	%	*Expected reduction of ~25-35%*
	43	cases/100 cows	*Projected clinical mastitis rate after change*
Clinical mastitis		55.8	reduced cases of mastitis in herd per year
Direct cost of a case of lameness ($ per case)	$ 50	$ per case	*Enter average cost to treat lameness*
Current lameness rate, %	65	cases/100 cows	*Enter average # of lameness treatments per 100 cows per year*
Estimated reduction in lameness treatment rate	35	%	*Expected reduction of clinical lameness by 25-50%*
	42	cases/100 cows	*Projected clinical lameness rate after change*
Clinical lameness		68.25	reduced cases of lameness in herd per year
Cost of replacement heifer ($)	$ 1,400	$ per heifer	*Enter estimate for heifer purchase*
Cull price per cow ($)	$ 600	$ per cull	*Enter average cull price*
Turnover rate before change (%)	42	%	*Enter annual herd turnover rate*
Expected reduction in annual turnover rate	6	%	*Enter expected reduction of 5-8 points*
	36	%	*Projected annual turnover rate after change*
Culling		18	reduced culls from herd per year
Financial Assumptions			
Cost of stall changes ($)	$ 15,000		*Enter cost of proposed stall changes*
Cost of manure handling system change ($)	$ 180,000		*Enter cost of proposed manure handling changes*
		$195,000	*Total cost of conversion*
Repayment Period (years)	5	yr	*Suggest 3-7 years*
Interest Rate of Loan	0.06	interest rate	