Volume 8 Issue 1 Spring 1999

UNIVERSITY OF MINNESOTA

DAIRY Initiatives

NEWSLETTER

Contents

See insert for Calendar of Events

Holy Cow! Is It Hot or What?

Engineering Options for Reducing Heat Stress

By KEVIN JANNI
Extension Engineer, Livestock Housing Systems

It may not be here yet, but hot and humid weather is coming. When the average temperature exceeds 70° F, dairy cows—particularly higher-producing cows—begin to experience heat stress. They reduce feed intake, milk production, and reproductive efficiency. In other words, your profits drop as the temperature climbs.

Fortunately, there are things you can do now to help minimize heat stress during the inevitable hot and humid weather coming this summer. Consider the costs and benefits of each option, then make the changes that make economic sense to you.

Provide shade

Shade reduces heat stress by reducing the amount of sun that reaches cows. Naturally ventilated curtain-sided barns make good shade. If you build shades, make them 12 feet tall or higher and leave room for good airflow underneath. A white or

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Feeding Strategies for Hot Weather

Nutritional Changes Can Reduce Production Losses

By JIM LINN
Department of Animal Science

Cows do best when the air temperature is between 41° F and 77° F. When it gets hotter than that, cows' efforts to maintain normal body temperatures may result in reduced feed intake, 10% to 25% lower milk production, decreased milk fat percentage, decreased fertility, depressed immune system, higher maintenance requirements, and overall less efficient milk production.

What can you do to minimize these responses? The most important thing is to provide a cool, comfortable environment. Once you have the environment as comfortable as possible, you can also look at some diet changes to help improve hot-weather productivity.

NUTRIENTS

Water. Water is the most important nutrient for lactating cows, especially heat-stressed cows. Water intakes increase sharply with air temperature until air temperature reaches the cow's body temperature. Above that point, water intake decreases because dry matter intake (DMI) and activity drop.

Provide cows with an unlimited

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Holy Cow! Is It Hot or What?

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Consider the costs and benefits of each option, then make the changes that make economic sense to you.

light-colored roof will increase shade effectiveness. Cows often lie down in the shade, so maintain some of the shaded area for good cow comfort. Shades over feed bunks encourage eating but do not provide an appropriate place for cows to lie down.

Improve ventilation

Ventilation picks up heat the cows produce and carries it away. The faster the air moves, the easier it is for animals to get rid of their heat. However, as air temperature approaches body temperature, ventilation loses its effectiveness for removing heat.

Increase air exchange in mechanically ventilated barns by cleaning fans and inlets. Dirty fans with rusty and dirty louvers can reduce airflow by up to 39%. Plugged or dirty inlets reduce airflow further.

You can also increase air exchange by installing more fans and inlets. Hot-weather ventilating systems should provide 500 cubic feet per minute (CFM) per 1,400-pound cow. Use rated fans to ensure that you get the necessary flow rate.

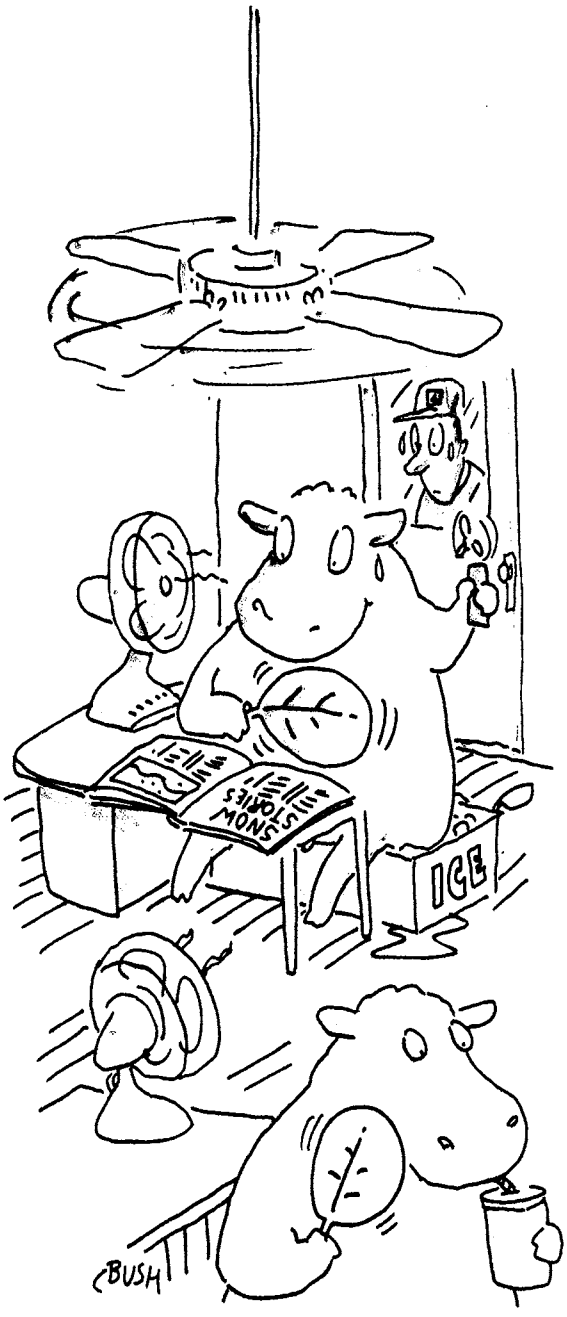
Inlet location and adjustment affect ventilation. Distribute slot and ceiling inlets uniformly throughout the barn so every cow gets fresh outside air. Adjust them so inlet air velocity is 600 to 800 feet per minute (FPM).

In naturally ventilated barns, increase air exchange by opening up the sidewalls as much as possible, having adequate sidewall height, and minimizing obstructions (e.g., silos, trees, other buildings, equipment, and hills) that reduce wind flowing past and through the barn. Make sure the ridge is as open as possible and not obstructed.

Use tunnel ventilation in stall barns

Tunnel ventilation provides air exchange and airflow past animals in a stall barn. Large exhaust fans are located at one end of the barn. Outdoor air enters at the other end and is pulled through by the fans. The ventilating rate is based on the cross-sectional area (height times width) of the animal area and the average air velocity (minimum of 220 FPM). Typical flow rates are 60,000 to 90,000 CFM. The inlet needs to be big enough to handle the airflow. Long barns with 110 cows or more need extra fan capacity.

Tunnel ventilation is not used in cold weather. It generally requires more airflow than a slot inlet ventilated barn. Some producers report fewer flies in tunnel ventilated barns.



John Bush ©1999

Use mixing fans

Mixing fans create a draft across or past an animal. They can be used in mechanically and naturally ventilated barns and milking parlor holding areas, and can be controlled with thermostats.

Mixing fans provide a draft but no air exchange. Air exchange is needed to exhaust the air heated by the cows and to bring in fresh outdoor air.

In stall barns with low ceilings, mixing fans blow air along the length of the barn across the cows' backs. Fans are usually located around the barn. The distance between fans depends on how

far the draft from a fan can be felt, but 20 feet is common. In naturally ventilated barns, mixing fans are normally installed at a height of about 12 feet and angled downward at about 20 degrees. The goal is to create air velocities around 200 to 300 FPM across the cows' backs. The recommended distance between fans is 30 feet for 3-foot diameter fans and 40 feet for 4-foot diameter fans. All of the fans should blow air in the same direction in naturally ventilated barns.

Use a sprinkling system

Sprinkling systems can be used along feed bunks and in holding areas to wet the cows periodically. The sprinkling must be intermittent to permit evaporation, which is what helps cool the cow. Adequate air exchange is also critical to remove the warm, moist air.

Use water droplets rather than a fine mist so the system wets the hair and skin. Irrigation nozzles and solid-cone coarse droplet spray nozzles with flow rates between 0.2 and 0.5 gallons per minute work very well. Locate sprinklers so they don't wet feed in the feed bunk or bedding in the freestalls. Wet bedding can lead to an increase in mastitis.

Sprinklers are typically on for 1 to 3 minutes every 10 to 15 minutes. Excess sprinkling wastes water and does not reduce heat stress. Mixing fans should remain on during sprinkling. Sprinkler systems can be automatically controlled using a thermostat and 30-minute cycle timer in series.

Don't overcrowd the milking herd

Overstocking freestall barns increases the amount of heat that must be removed. It also reduces airflow past the cows, which reduces their ability to get rid of heat. Some experts suggest having less than 100% occupancy to allow more airflow past the remaining cows.

In summary, elect a cooling system that fits your management and facilities. Make sure it works before the hot weather arrives and monitor cow performance to make sure the system is doing its job.

For More Information

Chastain, J. P., 1993. *Improving Mechanical Ventilation in Dairy Barns.* (AEU-3) Biosystems and Agricultural Engineering, University of Minnesota. http://www.bae.umn.edu/extens/aeu/aeu3.html. Also available in printed form from University of Minnesota Department of Biosystems and Agricultural Engineering, 612/625-9733.

Turner, L. W., R. C. Warner, and J. P. Chastain. 1992. *Micro-sprinkler and Fan Cooling for Dairy Cows: Practical Design Considerations.* (AEN-75) Biosystems and Agricultural Engineering, University of Kentucky. http://www.bae.uky.edu/~lturner/dairyeng.htm.

***Dairy Freestall Housing and Equipment Handbook* (MWPS-7) $22 plus tax and *Tunnel Ventilation for Dairy Tie Stall Barns* (NRAES-120) $4 plus tax, University of Minnesota Department of Biosystems and Agricultural Engineering, 612/625-9733.**

Sprinkling must be intermittent to permit evaporation, which is what helps cool the cow.

Watch Those Rays

Summer not only brings heat, it also brings plentiful sun. To people who work outdoors, that also means increased risk of skin cancer. Farmers are three times as likely to get skin cancer as the general population. Skin cancer can kill you. It's worth your while to try to prevent it. How? Extension textiles and apparel specialist Sherri Gahring offers the following tips:

- Avoid the sun if possible between 10 a.m. and 3 p.m.
- Wear a wide-brimmed hat or a hat with a backflap, long-sleeved shirt, and long pants when in the sun. A baseball cap does not provide adequate protection!
- Apply sunscreen with SPF 15 or higher 30 minutes before you go outside. Reapply every three hours. Use sunscreen even on cloudy days, since cancer-causing rays aren't stopped by clouds.
- Use lip balm with sunscreen. The lower lip is one of the most common sites for skin cancer.
- Wear sunglasses that filter out UVA and UVB radiation.
- Avoid the sun if you're taking medicine, such as antibiotics, that make you more sensitive to light. Check with your doctor if you're not sure.
- Ask your doctor to check you for skin cancer at your regular annual physical. Be sure he or she knows you have an outdoor occupation.

Feeding Strategies for Hot Weather

Continued from page 1

quantity of fresh, clean water in an easily accessible area close to the feeding area to encourage eating and drinking. Add fans and sprinklers or at least shade over the area to encourage consumption. Given a choice, cows will choose to rest in a shaded or cooled area rather than eat and drink from an uncooled, sunny area.

Consider both quantity and form of protein when feeding heat-stressed cows.

Should you cool the water? Texas research showed water cooled to below 59° F helped cool cows, but the small increase in milk production did not justify the cost of cooling the water. The cows also preferred warm (70° F to 80° F) over cooled water.

Protein. Consider both quantity and form of protein when feeding heat-stressed cows. Too much or not enough crude protein (CP) increases body heat production. Responses to increasing high-quality bypass protein supplements during heat stress have been minimal. Balance bypass (undegradable) and degradable protein.

Fiber. Excess fiber should not be fed during the hot summer months, but a minimum amount is needed to maintain DMI, milk production, and normal rumen function. High-quality forages are the best source of digestible fiber that is effective and produces minimum heat when fermented in the rumen.

Fat. Research on feeding fat during heat stress has not consistently shown improved DMI or milk yields. Follow practical recommendations on feeding fat. Do not feed more than 6% total fat in the dietary dry matter (DM). Also, avoid feeding more than 4% total fat to fresh cows for the first three weeks after freshening.

Minerals. The cations sodium (Na) and potassium (K) are important for the heat-stressed cow. Re-

Signs of Heat Stress

- **Respiration rates increase and cows may begin to pant. Mouths will be open and tongues will be stuck out.**
- **Cows sweat. One difference between cows and humans is cows lose potassium rather than sodium through sweating.**
- **Dry matter intake (DMI) decreases. As cows eat less, rumen activity decreases. Production of volatile fatty acids (energy) drops.**
- **Water consumption increases.**
- **Urine volume generally decreases.**

search has shown an increase in milk production and DMI during heat stress when K is 1.2% or higher and Na 0.45% or greater in the dietary DM.

The ratio of cations (Na and K) to anions (Cl and S) may be as important during heat stress as the concentrations of individual minerals. In Georgia, heat-stressed cows responded to increasing the Dietary Cation-Anion Balance (DCAB = Na + K - Cl-S) from 0 to 35 milliequivalents/100 g. Using a combination of sodium and potassium to increase DCAB is recommended. Florida research indicated increasing Cl concentration in the diet decreased DMI and milk production, resulting in a maximum recommendation of 0.35% of the DM.

FEED ADDITIVES

Buffers. Buffers can be beneficial during heat stress for two reasons. First, if fiber content of the diet is minimized and/or cows are selecting against forages, buffers can help prevent low rumen pH and rumen acidosis. Second, buffers contain Na (see above).

Fungal or yeast cultures. Arizona researchers have shown that feeding *Aspergillus oryzae* reduced heat stress in cows by lowering rectal temperatures. Milk production increased in some cases due to improved fiber digestion in the rumen.

FEEDING MANAGEMENT AND STRATEGIES

Some alterations in the feeding program can help entice cows to eat during heat stress.

- **Increase the number of feedings.** This has two advantages. First, the feed will be fresher, encouraging consumption. Second, cows are curious, so if the feeding area is comfortable they will come to the manger more frequently with increased feedings. The number of feedings to obtain benefits is not known, but it is probably at least three per day.

- **Time feeding right.** During hot weather, cows eat mostly at night and after milkings. Have fresh feed in the mangers after milking. Feed most of the fresh feed at night. Sunset and about an hour before sunrise are good times.

- **Feed a TMR.** A TMR with forages mixed in helps reduce the cow's tendency to selectively consume concentrates rather than forages. A well-balanced TMR allows you to optimize fiber in the ration while encouraging DMI and minimizing rumen fermentation fluctuations and pH declines.

- **Add water.** Water softens fiber feeds and reduces dustiness and dryness of the diet, increasing palatability and DMI. A 3% to 5% addition of water is recommended when ration DM is above 60%.

- **Keep mangers/bunks clean.** Remove refused feed every day. Check and clean any moldy and/or heating feed from the corners and edges of feeding areas at least three times a week, more often if feeding animal protein and fats. A decaying feed smell may reduce DMI even when fresh feed is offered.

- **Increase nutrients.** Increase the concentration of all nutrients in diets as DMI decreases during heat stress. Guidelines for nutrients that have been shown to influence DMI and milk production during heat stress are listed below.

Nutrient	*Change and dietary concentration (DM basis)*
ENERGY	Increase to compensate for reduced DMI. A 0.80 Mcal NE_l/lb is probably the maximum that can be obtained with adequate fiber levels.
FIBER	(absolute minimum concentrations in the ration) ADF minimum - 18%. NDF minimum - 25%. NDF from high-quality forages - 20%.
FAT	Added amount generally should not exceed 3% or 2 lb/day.
PROTEIN	Meet overall CP requirement. Use a combination of rumen degradable and undegradable sources to achieve a rumen undegradable level of 36% to 40% of CP.
SODIUM	Increase to 0.45% to 0.55% of dietary DM.
POTASSIUM	Increase to 1.5% or more. High-quality alfalfa is a good source.
SALT	Feed 5 to 6 oz/cow/day.
CHLORINE	Minimum - 0.25%, maximum - 0.35%.
DCAB	25 to 35 meq/100g DM.
MAGNESIUM	Increase to 0.3% or 0.35%.
YEAST AND FUNGAL CULTURES	Recommended.

What about dry cows?

LITTLE IS KNOWN about how heat stress affects DMI of the dry and particularly close-up dry cow. However, it is apparent that any cause of off-feed or major decrease in DMI during the dry period can lead to more health problems at calving and potentially reduce subsequent milk production. As much attention should be given to alleviating heat stress in dry cows during the last trimester of gestation through environmental and dietary changes as is given to lactating cows.

Heat and Safety

Heat can be a dangerous thing for a farmer. It can cause direct harm if you get so hot that your body can't handle it. It can also add to your overall stress load. Stress can be a big contributor to accidents, and that's even more true when you can hardly see because of the sweat dripping into your eyes.

How can you stay safe and keep your help safe during hot weather? By doing what you can to keep cool, and by being extra aware of the hazards around you. Here are some ideas.

• **Get set for safety.** When you're stressed by heat, you don't always think about safety basics. Before you head into the hot, busy summer, make sure you're set for safety (see box).

• **Drink plenty of water.** To stay healthy in hot weather, drink lots of water—at least eight large glasses a day, more if you're really working up a sweat. To tell if you're drinking enough, check the color of your urine. If it's dark, drink more water.

• **Wear cool clothes.** Light-colored, loose-fitting clothing made of natural fibers such as cotton will help you stay cool. Socks made of materials such as Polypropylene™ and Thermax™ will help your feet stay cool and dry. A wide-brimmed hat can help you stay comfortable, too.

Top Ten Tips for Farm Safety

By JOHN SHUTSKE
Agricultural Safety and Health Specialist

1. **Make sure all tractors have rollover protection.**
2. **Replace missing power take-off and rotating equipment shields.**
3. **Keep lights, flashers, and reflectors on machines in working order and use them.**
4. **Replace slow-moving vehicle signs that aren't bright and clean.**
5. **Keep machinery in good working order.**
6. **Use proper equipment and procedures when hitching and unhitching implements.**
7. **Don't enter a manure pit, grain bin, or silo unless you know and follow confined-space safety rules.**
8. **Make sure all workers know how to operate their machines correctly and safely.**
9. **Learn basic first aid, CPR, and emergency response.**
10. **Don't give jobs to kids unless they can follow directions, do the job safely and legally, and respond to unexpected situations they might encounter.**

• **Take time to cool off.** Splash yourself with water occasionally. Take breaks in the shade. Five minutes spent cooling off may be five minutes you're not getting stuff done. But it's a lot less time off than a run into the emergency room—or a lifetime in a wheelchair if you suffer from an accident related to being stressed by heat.

• **Watch for heat exhaustion and heatstroke.** Heatstroke is a life-threatening condition in which your body loses its ability to control its own temperature. Your pulse races, you stop sweating, you may get dizzy, your body temperature soars. To give first aid to a person with heatstroke, cool them down with a cold water bath until their temperature drops to 101°F (oral) and massage their body to keep blood circulating. Get to a doctor immediately. If distant from a hospital, wrap the person in a cold, wet sheet or wet the person's clothing with cool water.

• **Plan around the heat.** You already plan your day around the rain forecast. Think about the heat forecast, too. Avoid strenuous work if it's super hot. The term for doing hard physical labor in extreme heat when you could save it for a cooler day is not "macho." It's "stupid."

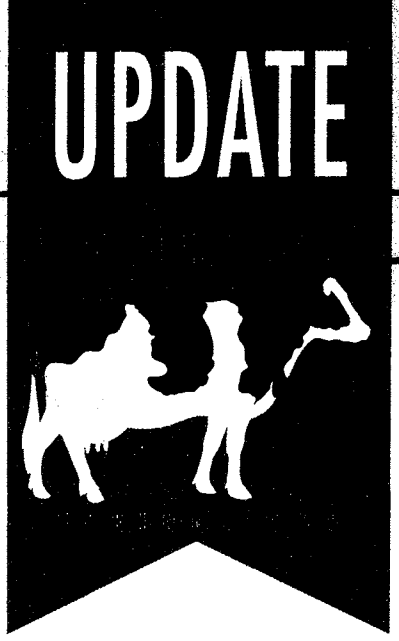
• **Watch the sweat factor.** Sweat is good because as it evaporates it helps cool your skin. But it can also make your hands slippery and impede your vision. Be alert to these possibilities and be extra careful when performing everyday tasks when you're sweaty.

• **Quit while you're ahead.** Heat exhaustion occurs when you are low on water and electrolytes. Symptoms are cold, clammy skin and a slowed pulse. If you think you might have heat exhaustion, stop working. If you start feeling dizzy or sick to your stomach, get out of the sun, drink lots of fluids, and take it easy the rest of the day. You've had too much.

• **Watch your workers.** Your help, whether hired hands or family members, may hesitate to slow down for the heat because they don't want you to think they're wimps. Give them permission to take care of their health and safety by adjusting their (and your) expectations in hot weather.

UPDATE

MINNESOTA DAIRY LEADERS ROUNDTABLE



In 1992, dairy farmers, and CEOs of 32 dairy related businesses and organizations made a formal commitment to revitalize Minnesota's dairy industry by forming a structure to unite their effort. That structure is the Dairy Leaders Roundtable. This newsletter highlights Roundtable accomplishments as well as on-going projects and plans.

Roundtable examines its long-term role in revitalizing state's dairy industry

Through an opinion survey of individuals associated with the Minnesota Dairy Leaders Roundtable, members of its steering committee plan to gather information to be used by the Roundtable in examining the group's long-term vision and role in the industry.

At a meeting of the Roundtable's steering committee in April, participants agreed that a carefully conducted opinion survey could provide valuable information. A survey was to be developed and conducted in preparation for a group discussion at a future meeting of the Roundtable.

At recent meetings of the Roundtable, there has been considerable discussion about various issues and activities in which the Roundtable may wish to get involved or express an opinion. This discussion has focused on ways in which the Roundtable might extend and enhance its role in helping to revitalize Minnesota's dairy industry, develop a strong legislative agenda, and work in closer cooperation with groups facing similar issues in the Midwest.

This discussion has focused on ways in which the Roundtable might extend and enhance its role in helping to revitalize Minnesota's dairy industry . . .

Also under consideration are funding questions in support of Roundtable Partnership Projects. These projects include the quarterly Dairy Initiatives Newsletter, which is prepared by the University of Minnesota Extension Service and mailed to every dairy producer in the state.

A full set of strategic goals have guided the Roundtable since its inception. The Roundtable's goals for 1999 include, in part, the following:

- Develop and communicate information on the value of the dairy industry to the State of Minnesota
- Establish environmental parameters based on science and fact for feedlot issues
- Promote access to trained, reliable management/labor force for dairy producers
- Champion access to competitive capital for producers
- Continue to develop liaison with surrounding states
- Continue to hold the Minnesota Dairy Extravaganza (see story, this section)
- Improve market share to 6.8% (see story, this section)

The next meetings of the Roundtable will be on June 7 and September 13.

Study reveals importance of state's dairy industry

A new study, outlining the "Economic Importance of Minnesota's Dairy Industry", was funded by the Upper Midwest American Dairy Association and presented to attendees at the Roundtable's first annual Dairy Extravaganza in late February.

The study, prepared by George Morse, Professor and Extension Economist at the University of Minnesota, and Brigid Doherty, graduate research assistant, highlights numerous dairy industry statistics, including employment and income impacts on the state's economy. In 1998, Minnesota was the fifth largest milk producing state with a 5.9% share of national milk production. Milk accounts for approximately 13% of the total value of agricultural production in the state and the industry supports about 54,000 jobs, providing $2.4 billion in income to state residents.

When taken together, the study, points out, Minnesota's dairy producers, processors and the aligned support sectors are equivalent to the state's second largest employer. The study is available in brochure form by calling the Dairy Council at 1-800 642-3895.

Dairy leaders discuss Legislative issues

A panel of state and federal representatives discussed a variety of legislative issues facing the dairy industry as part of the Roundtable's meeting in St. Cloud in late February.

Issues receiving the most discussion included:

- State legislation on volume premiums
- Federal dairy compacts
- Federal Milk Marketing Orders and Option 1A
- State feedlot laws

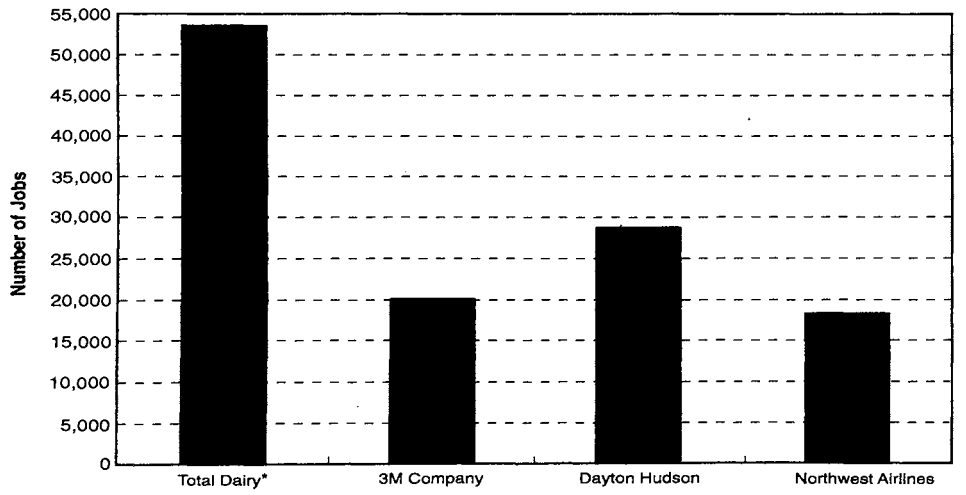
Participating in the panel discussion were representatives of elected officials and dairy industry officials including: Frank Kimm, from the Minnesota Milk Producers Assn.; Bruce Klevin, from the Minnesota Association of Cooperatives; Sam Willet, agricultural legislative director for Congressman Gil Gutknecht; and Dave Ladd, state constituent representative for Senator Rod Grams.

Minnesota Dairy Extravaganza draws favorable comments

When the two-day (February 23 and 24) Minnesota Dairy Extravaganza, which was planned and promoted by the Dairy Leaders Roundtable, was complete, attendees gave it a good review – equivalent to two thumbs up. It was the first such event of its kind in Minnesota and participants urged that it become an annual event.

Participants particularly appreciated the timing of the event – held in St. Cloud in conjunction with the Central Minnesota Farm Show – and the opportunity to participate in seminars and other meetings, all at one location and at one time.

MINNESOTA DAIRY JOBS VS. LARGE FIRMS, 1997



Note: 3M, Dayton Hudson, and NWA estimates do not include support industries. Total Dairy* includes production, processing and support industries.

Some suggestions for improvement in future years included the desirability of having additional dairy exhibitors at the trade show, having entertainment at the banquet, and avoid having meetings overlap one another.

At the Roundtable meeting, using the theme "Passion Leads to Action", Bill Dropik welcomed participants. Reports from a variety of committees were presented. Dave Daeges presented the financial information and said Minnesota Dairy Partnership, Inc. the funding arm of the Roundtable, had a balance of approximately $44,000.

At the meeting, Mark Pochardt, from the Minnesota Department of Agriculture reviewed the current data on the dairy sector. He indicated that in January 1999, the state had 8,860 dairy farms with 545,000 cows producing an average of 1,510 pounds of milk per month. Minnesota ended 1998 ranking 5th in milk production and 14th in production per cow (up from 24th in 1997).

The Roundtable participants discussed the dairy farm advisory team program which now has approximately 400 participating farms and reviewed a series of favorable comments/testimonials from producers. Also discussed at some length was the pressing need for dairy labor and dairy labor training programs. A number of efforts and programs to alleviate the shortage of trained labor were identified.

Roundtable approves new steering committee members

	1998	1999
Producers	Bill Dropik Paul Kent Mel Kunstleben	Bill Dropik Paul Kent Mel Kunstleben
Marketing Orgs.	Don Berg Clint Fall	Don Berg Clint Fall
Service Orgs.	Dave Daeges Dan Little	Dave Daeges Dan Little
Rural Women Orgs.	Pat Irrthum	Doris Mold
Minn. Dept of Ag.	Gene Hugoson	Gene Hugoson
Univ. of Minn.	F. Abel Ponce de Leon	F. Abel Ponce de Leon

MINNESOTA DAIRY FACTS

- Mailbox milk price in Minnesota is higher than national average
- Minnesota dairy herd production averages less than 16,000 lbs. / cow
- California herd production averages more than 20,000 lbs. / cow
- About 15% of Minnesota milk goes into the fluid market
- Minnesota has the highest per capita consumption of milk in the U.S.
- About 80% of Minnesota milk goes into the cheese market
- Milk production in Minnesota has been steadily declining
- Milk production in the U.S. has been steadily increasing
- No new processing plants are being planned for Minnesota
- Significant investment in milk processing plants is occurring outside Minn.

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If you have questions about regulations, permits or other dairy development issues, you can get advice toll-free from an Agriculture Development Specialist, Minnesota Department of Agriculture by calling

1-800-967-AGRI (2474)

Calendar of Events

Educational opportunities open to all producers and other professionals in the dairy industry

MAY

11	Herd Management Topics for SCOUT Program Users, Ottertail Power Company, Fergus Falls, MN. Contact: Minnesota DHIA 612-682-1091
13	Herd Management Topics for SCOUT Program Users, Stearns County Extension Office, St. Cloud, MN. Contact: Minnesota DHIA 612-682-1091
25-27	Minnesota Dairy Health Conference Earle Brown Center, University of Minnesota, St. Paul, MN. Contact: Janice Storebo 612-624-3434

JUNE

1	Herd Management Topics for SCOUT Program Users, Olmsted County Extension Office, Rochester, MN. Contact: Minnesota DHIA 612-682-1091
3	Herd Management Topics for SCOUT Program Users, DJ's Restaurant, New Ulm, MN. Contact: Minnesota DHIA 612-682-1091
7	Minnesota Dairy Leaders Roundtable Meeting, Sheraton Inn Midway, St. Paul, MN. Contact: Ed Frederick 507-835-3422
10	Minnesota Dairy Judges Conference, Dan & Megan Brinkman's, Elmbrink Holsteins, Young America, MN. Contact: Steve Pooch 651-642-2200
20-23	American Dairy Science Assn Annual Meeting, Marriott Downtown, Memphis, TN. Contact: Jim Linn 612-624-6789

JULY

8	Summer Field Day, University of Minnesota, West Central, Experiment Station, Morris, MN. Contact: Jean Spohr 320-589-1711
13-14	Minnesota Alfalfa & Forage Expo, Landsverk Dairy Farm, Fosston, MN. Contact: Betty Schiefelbein 651-436-3930

AUGUST

2 & 3	Grazing Management Workshop, University of Minnesota, West Central Experiment Station, Morris, MN. Contact: Jean Spohr 320-589-1711
3 & 4	4-State Applied Nutrition & Mgmt Conf, LaCrosse Center, LaCrosse, WI. Contact: John Petty 608-223-1111 or Randy Shaver 608-263-3491
5 & 6	Grazing Management Workshop, University of Minnesota, North Central Experiment Station, Grand Rapids, MN. Contact: Jean Spohr 320-589-1711
26 thru Sept 7	Minnesota State Fair, State Fairgrounds, 1265 Snelling Avenue N, St. Paul, MN. Contact: Minnesota State Fair 651-642-2200

SEPTEMBER

Thru Sept 7	Minnesota State Fair, State Fairgrounds, 1265 Snelling Avenue N, St. Paul, MN. Contact: Minnesota State Fair 651-642-2200
13	Minnesota Dairy Leaders Roundtable Meeting, Sheraton Inn Midway, St. Paul, MN. Contact: Ed Frederick 507-835-3422
20-22	Minnesota Nutrition Conference, Marriott Hotel, Bloomington, MN. Contact: Lee Johnston 320-589-1711

JANUARY 2000

11 & 12	Forage Conference, Hinckley, MN. Contact: Betty Schiefelbein 651-436-3930

Additions or changes to the Minnesota Dairy Calendar may be directed to:

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205 Haecker Hall
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Phone: 612-624-4995
Fax: 612-625-1283
Email: raexx001@tc.umn.edu

Look for us on the Web:

http://www.animal.agri.umn.edu/dairy/DairyCalendar.htm

MINNESOTA DAIRY LEADERS ROUNDTABLE

MISSION: "To develop and implement a shared vision of the Minnesota dairy sector through strengthening its competitiveness, profitability and social vitality."

1999 STEERING COMMITTEE:

Bill Dropik, *Minnesota Milk Producers Association*

Paul Kent, *Land O'Lakes, Inc.*

Mel Kunstleben, *Associated Milk Producers Inc.*

Don Berg, *Land O'Lakes, Inc.*

Dave Daeges, *Minnesota Bankers Association*

Daniel E. Little, MS, DVM, *Minnesota Veterinary Medical Association*

Gene Hugoson, Commissioner, *Minnesota Department of Agriculture*

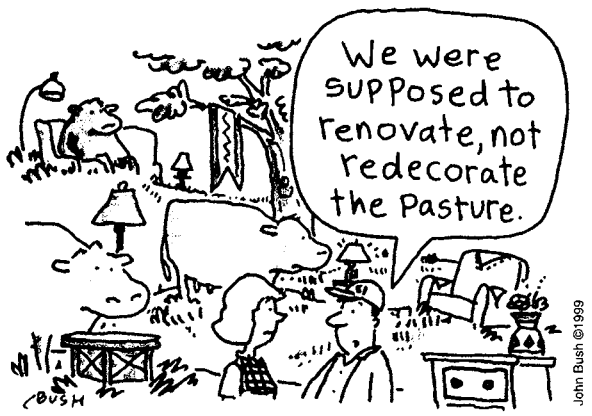
Doris Mold, *Women Involved in Farm Economics*

Gene Hugoson, *Minnesota Department of Agriculture*

F. Abel Ponce de Leon, *University of Minnesota*

Clint Fall, President, *First District Association*

Ed Frederick, *MDLR facilitator, Southern Experiment Station Annex, 12298 350th Ave., Waseca, MN 56093-5160 Phone 507-835-3422*



Grazing Tips

Pasture renovation and grazing management increases production and profitability of pastures

By GREG CUOMO, DENNIS JOHNSON, FRANK FORCELLA, AND MARGOT RUDSTROM
West Central Research and Outreach Center

Grazing pastures can be profitable for Minnesota farmers. Pastures, however, are often not as productive as they could be. A three-year study at the West Central Experiment Station provides some valuable insights into how grazing intensity and pasture renovation can improve pasture productivity and your farm's profitability.

In the study, plots were grazed to leave 2 to 4, 4 to 6, or 6 to 8 inches of residue after grazing. At the beginning of the study, pastures were primarily smooth bromegrass, bluegrass, and quack grass. Pasture renovation involved spraying 0.75 lb/acre glyphosate when pastures were 4 inches tall in the spring and no-till drilling 1) alfalfa, 2) red clover and bird's-foot trefoil, or 3) a graziers mix with many legumes and grasses. One area was left untreated.

Grazing intensity

Pastures that that were grazed to leave 2 to 4 inches of residue produced less forage (4.7 tons/acre/year) than pastures grazed to leave 4 to 6 (5.4 tons/acre/year) or 6 to 8 inches (5.5 tons/acre/year) of residue.

Producers often feel if forage is left in a pasture after grazing, the forage is "wasted." This study and other research shows just the opposite. Forage left in a pasture after grazing helps the pasture to regrow more quickly. This means more forage is available for the next grazing.

Pasture renovation

All pasture renovation treatments produced more forage than the control. Over the three years of the study, alfalfa produced 7.0 tons/acre more, the clover-trefoil produced 3.8 tons/acre more, and the graziers mix produced 5.5 tons/acre more. Of the many species planted, alfalfa, orchardgrass, and red clover were the most persistent. Taking into account seed, herbicide, machinery, and labor expenses, the additional forage produced cost $8.07 for the alfalfa, $12.81 for the clover/trefoil, and $9.95 for the graziers mix. These costs are about 10% to 15% of the cost of purchasing that forage as hay and don't include the benefits of increased forage quality and intake or the fact that these pastures lasted beyond the study.

Conclusion

Management that leaves at least 4 inches of residue after grazing and includes adapted legumes and grasses can increase the production and profitability of pastures in Minnesota.

Nine Steps to a Productive Pasture

MANY FARMS HAVE 15 or 20 acres of unmanaged pasture that is summer home for a group of unmanaged heifers or dry cows. This bluegrass and Canadian thistle patch may have more productive capacity than you ever imagined with little extra effort on your part. Steps to productivity are:

1. **Write a goal for the pasture and make a plan to reach the goal.**
2. **Check fertility and add manure to improve fertility.**
3. **Monitor weeds and identify a low-input strategy for control.**
4. **Introduce a locally adapted legume such as alfalfa or red clover.**
5. **Check perimeter fence for stock-worthiness.**
6. **Organize several paddocks for easy-to-move internal fences and water.**
7. **Stock for short grazing (1 to 3 days) and long rest (21 to 30 days) periods.**
8. **Supplement heifers if needed to maintain a reasonable growth rate.**
9. **Watch your pastures improve and your profits grow.**

For more information on grazing:

Pastures for Profit: A Guide to Rotational Grazing (A3529), 36-page bulletin available at county Extension offices.

Grazing from A to Z, two-day grazing workshops, August 2–3 at Morris and August 5–6 at Grand Rapids. Contact Jean Spohr, West Central Research and Outreach Center, 320/589-1711.

Reproductive Performance

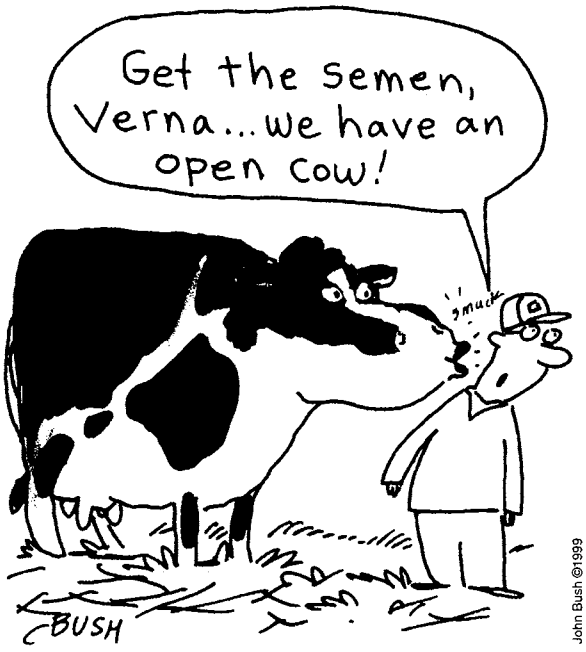
By KENN BUELOW, STEVEN STEWART, PAUL RAPNICKI, and SANDRA GODDEN
Dairy Production Medicine Veterinarians

What do we look at? What goals do we set? How do we get there?

If you'd like to boost your profitability, consider evaluating your herd's reproductive performance. Depending on where you are now, you can save $75 or more per cow by improving your herd's reproductive track record.

The first and simplest step to improving your reproductive program is to get in the habit of making a list every week of open cows that need to be bred. Then find those cows and/or bring them into heat, detect the heat, and get semen into them. We know of only one fluid that, when infused into a cow's uterus, is proven to increase the pregnancy rate: SEMEN.

After you have accomplished this, the next step is to gather information about your dairy's past and current reproductive performance and compare it to other dairies in your region. This will help you determine where you should focus your efforts. Finally, estimate the potential financial benefit of changes and, if they appear worthwhile, make them.



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Reproduction's Down—What's Up?

REPRODUCTIVE PERFORMANCE, especially average days open, took a turn for the worse about five years ago and this change continues today. University of Minnesota veterinarian Brad Seguin notes that this change is closely correlated with the onset of commercial availability of BST to Minnesota dairy farmers. BST causes cows to give more milk over a longer time. This can affect reproductive performance in two ways. First, increased production stresses cows nutritionally, so they have fewer resources to devote to getting pregnant. Second, being in milk longer means cows can stay profitable longer, giving them a longer time for breeding in many herds. In other words, BST may be making it tougher for a cow to get pregnant, but it may also cause farmers to give cows more time in which to get pregnant, thereby increasing average days open.

An example

Let's use an example to show how this works. In Table 1, we have summary data from a Minnesota herd generated using DHIA records and DC305/Scout. The report calculates three-week heat detection rates (HDR), pregnancy rates (PR), and conception rates (CR) for the past year.

To create this report, the program counted the number of cows eligible to be found in heat and bred in every 21-day estrus cycle (column 2) and the number actually found in heat and bred (column 3). The number of animals found in heat divided by the number expected in heat gave us the HDR (heat detection rate, column 4).

Next, the number eligible to become pregnant (column 5) was counted. This number is equal to or less than the number eligible for heat. It is less when a cow is bred but not determined open or pregnant to that breeding because of culling or long intervals between pregnancy exams. Also counted were the number of cows actually becoming pregnant (column 6). The program then divided column 6 by column 5 to determine PR (pregnancy rate, column 7). Finally, using the equation HDR x CR = PR, we inferred the CR for each three-week window (column 8).

We next used this information to answer questions about pregnancy rate. Is it low? If it is low, is it a seasonal, acute, or chronic problem? Is the low pregnancy rate a result of poor heat detection or poor conception? To decide, we compared this information with industry standards (Table 2). We concluded that the dairy had an acceptable conception rate except for mid to late June (6/9/98–6/30/98). However, the pregnancy rate was too low due to the poor heat detection program.

Next we assessed the financial impact of increasing the pregnancy rate. This depends on where

a dairy's pregnancy rate is and how much improvement it makes. The lower a dairy's pregnancy rate, the greater the benefit of an increase. If pregnancy rate increases from 12% to 13%, the additional net income from increased milk production and reduced culling would be approximately $77/cow/year. Increasing the pregnancy rate from 18% to 19% would only increase net income approximately $23/cow/year. Increasing the pregnancy rate from 26% to 27% would only increase net income approximately $4/cow/year. Thus, if a dairy is able to maintain a pregnancy rate greater than 22%, time, money, and management efforts should be focused at a problem with a greater potential return.

In our example, the dairy made changes to its heat detection program in early September, resulting in a pregnancy rate of 13% to 19%. The number of open cows dropped from approximately 520 (midsummer) to 350. If we assume the pregnancy rate was 11% before the heat detection change and is now 16% (and will continue to be for the next year), we can expect an increase in net income of $301/cow/year.

Your farm

A table like the one we made for the sample farm can tell you many valuable things about your reproductive program.

1. It can show you the number of cows open and eligible to become pregnant for every 21-day period in the last year.
2. It can show how heat detection, conception rate, and pregnancy rate vary.
3. It can show progress. You can evaluate a management change to improve heat detection in three weeks—that's rapid feedback. A management change to improve conception rate can be evaluated in eight weeks.
4. Finally, it can show you how many cows are open and need to be bred. If this number is dropping, a greater percent of the herd is pregnant.

Depending on your current circumstances, you may find this information to be a big boost as you work to improve your farm's profitability.

Table 1. Reproductive data from a Minnesota dairy.

DATE	# ELIGIBLE FOR HEAT	# DETECTED IN HEAT	% HEAT DETECTION (HDR)	# ELIGIBLE TO BE PREGNANT	# PREGNANT	% PREGNANT (PR)	INFERRED CONCEPTION RATE % (CR)
12/23/97	713	158	22	708	51	7	32
1/13/98	673	190	28	670	63	9	32
2/3/98	782	174	22	781	59	7	32
2/24/98	739	192	25	737	56	7	28
3/17/98	673	188	27	666	56	8	30
4/7/98	609	158	25	607	79	13	52
4/28/98	545	103	18	542	69	12	67
5/19/98	549	79	14	549	43	7	50
6/9/98	516	65	12	515	7	1	8
6/30/98	518	106	20	517	48	9	45
7/21/98	518	146	28	516	37	7	25
8/11/98	534	161	30	531	43	8	27
9/1/98	569	237	41	564	74	13	32
9/22/98	600	284	47	582	82	14	30
10/13/98	563	268	47	547	105	19	40
11/3/98	523	266	50	513	100	19	38
11/24/98	491	264	53				
12/15/98	353	207	58				
Averages			31			10	32

NOTE: This report can be generated with information from DHIA, but is only accurate if the dairy is recording—and making sure DHI is entering—all heats, breedings, and pregnancy/open information.

Tips for Improving Reproductive Performance

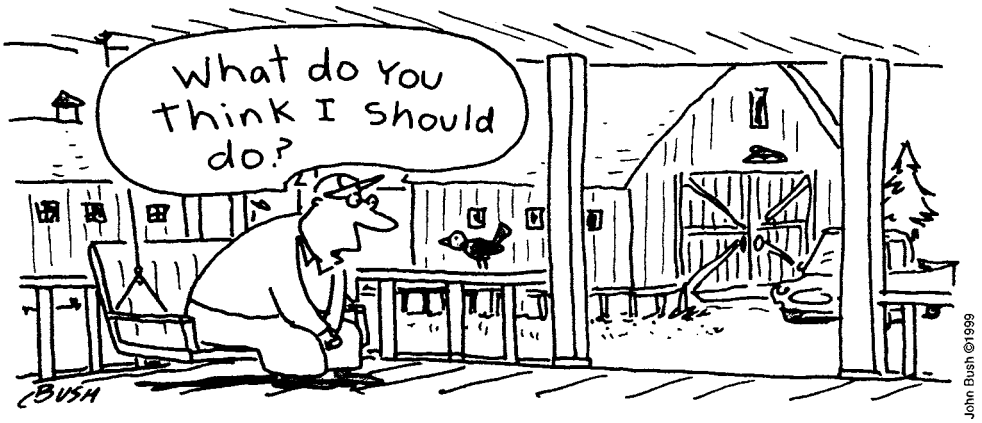
- **Be more willing to put semen into questionable heats.**
- **Use aids—Kamar heat detectors, tail chalking, pedometers, electronic patches.**
- **Make heat detection a priority. Have one person responsible for it, and dedicate a consistent time for heat detection every day.**
- **Allow cows access to good footing outside of feeding time to allow expression of heat.**
- **Use prostaglandins and other hormones to help with timing of breedings for cows not found in heat after more than 80 or 90 days in milk.**
- **Provide good cow comfort to keep cows' feet and legs healthy.**

Table 2. Average values from 2,561 Minnesota DHIA herds for 1998.

	Low range (bottom 5%)	Average	High range (top 5%)
Heat Detection Rate	17%	35%	49%
Conception Rate	20%	34%	48%
Pregnancy Rate	5%	12%	19%

Value of a Diagnostic (Advisory) Team

By DAVID WEINAND
Dairy Extension Specialist, South Dakota State University



Remember building a snowman when you were in grade school? As you rolled the base of the snowman, it got bigger and bigger and more and more difficult to push until you couldn't roll it any more. But if your neighbor and brother or sister came to help you, and if you worked together, you could push that snowball so much farther.

That is what an advisory team can do for you. Since the price of milk has fallen earlier this year, many producers have looked at either tightening their belts or doing something different. Going into unfamiliar territory can be a little scary—just ask anyone who has doubled their herd size in the past 10 years. An advisory team can help you get that ball rolling and keep it rolling. It can help you over the top of that hurdle that is holding you back. It can help you break through that wall that you have been banging your head against for the past year.

Here are some things an advisory team can do for you:

• **Open lines of communication.** Imagine that you go to your doctor with a bad headache, but no one in the doctor's office speaks English. You need someone to help you communicate to get the treatment you need to get better. An advisory team will accomplish the same principle. Communication between your veterinarian and the feed sales representative who balances your ration can allow you to adjust situations in your operation before they become serious. It also allows you and your veterinarian to solve problems, and not just treat symptoms.

• **Bring your experts together to work more effectively for you.** The individuals you work with on a regular basis have their individual areas of expertise (agronomy, nutrition, herd health, financial). Only talking to one person about an issue may leave others out of the loop as to what is happening with you and your operation. Have you ever been out of the information loop? How did that make you feel?

• **Save you money.** Farms that have adopted recommendations of advisory teams have seen a minimum of a $2 return for every $1 invested. For example:

- Investing in routine forage sampling and incorporating those results into a balanced ration could easily save $.10 to $.20/cow/day on your feed costs. If the average 60-cow herd tested forages routinely, these tests could be paid for in the first week, not to mention the potential improvement in production.
- Reducing your SCC from 350,000 to 150,000 will increase the amount of milk you get from your cows. Decreasing your SCC by 200,000 will result in a gain of 200 pounds per lactation for first-lactation animals and 400 pounds per lactation for older animals. Decreasing your SCC will also decrease the possibility of having a clinical case of mastitis, which costs approximately $107 in lost milk, medication and veterinary expenses. Also, even just a $.05/cwt premium bonus with a rolling herd average of 18,000 pounds of milk will return you $9/cow.

• **Make you more competitive.** An advisory team can help you understand your costs to produce corn, forages, meat, or milk. This will make you more cost competitive in the long run. It will help you answer questions such as: "Can I justify the purchase of a new piece of equipment, or will this purchase put my operation in a difficult financial position?"and "Can I buy hay or corn cheaper than raising it myself?"

In summary, a dairy advisory team can add value to your operation and make you more competitive in the year 2000 and beyond.

Editor's note: This information was adapted from: http://www.animal.agri.umn.edu/dairy/impact-mgmt.html. *For information on how you can establish an advisory team for your farm, contact Katy Kulesa, Minnesota Department of Agriculture, 651/215-3946.*

Beyond the Bottom Line

Keep Connected During Stressful Times

By MADGE ALBERTS
Children, Youth, and Families Program Leader

There's hardly anything that causes more stress for a dairy farmer than hearing that the BFP has dropped $6 overnight! Even when it's anticipated, and even when the actual reduction to the farmer probably won't be quite that much, the prospect of losing $200 or more per day in revenue is a scary thought that creates significant stress.

A certain amount of stress, or some kinds of stress, can help motivate you to keep your life and business on track. However, when stress crosses the line and becomes too much, or we don't deal with it right, it can damage our health, threaten our safety, and hurt even our most important relationships.

In an informal study, Red River Valley farmers were asked their number one health concern related to farming. Every single respondent identified stress as the top health concern!

Stress has become a serious issue for farm families. And it's more than just plunging milk prices causing it. Changes in agriculture, urban expansion, feedlot policies, uneasiness about the future, divorce—all these and more produce stress.

How do family members react to stress? Unfortunately, the typical reaction is often to turn away from each other, to work harder, to seek isolation.—just the opposite of what is needed to maintain healthy family relationships. In stressful times, we need to come together, support each other, and find creative ways to lessen the negative effects of stress.

What are some ways of keeping connected with family members during times of stress?

• TALK to each other about the issues causing stress. This seems so obvious, yet people often don't communicate when they're feeling stress. Sometimes talking can help you find the sources of stress and alternatives for solving it. But even when there's not much you can do about the issue, like the fall in milk prices, talking about the hows and whys and feelings associated with it helps everyone keep things in perspective.

• LISTEN to each other. People need to feel heard when they talk. Sometimes, in trying to make someone feel better, the listener will offer advice or solutions, or analyze or judge what's being said. These things make the speaker feel his or her thoughts are not valid. Just listening and affirming another's feelings helps ease the burden of stress.

• EXERCISE together. This is a hard one, for sure. How can busy dairy families possibly take the time to exercise? And why should they, when they're outside moving around all day long? There are a number of reasons. First, it creates some time to just be together. Second, exercise has been proven to reduce stress. And finally, the exercise obtained while farming is not often the aerobic variety, which helps keep hearts—and minds—healthy! Even a 15 minute walk a day—together—will go a long way in helping reduce stress and keeping physically healthy.

• WORSHIP together. No matter what your faith background is, your spirits need to be cared for regularly, even more so during times of stress. Make sure that you attend to that spiritual need, both as individuals and as families. The bonds created when families participate in rituals together help maintain strong relationships. People often stop going to church when they're stressed. Yet a faith community, and particularly one where you have established relationships with other members, can be a tremendous source of strength and encouragement.

• SEEK friends and colleagues as support systems. It's important to know you aren't alone in the situations causing stress.

If the stress gets too overwhelming, seek professional help. Physical symptoms such as sleep problems, digestive problems, chemical abuse, verbal or physical abuse, or emotional symptoms such as extreme anger, sadness or depression, are all signs that you are overloaded. Consult clergy, your doctor, and/or mental health professionals.

Uncontrolled stress can be a risk factor in relationships, safety, and health. Keeping connected with the important people in your life during times of stress can provide a safety net that not only keeps you from "stressing out," but can actually enrich your relationship.

In stressful times, we need to come together, support each other, and find creative ways to lessen the negative effects of stress.

DAIRY In NEWSLETTER

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