

UNIVERSITY OF MINNESOTA

# DAIRY

# Initiatives



N E W S L E T T E R

## Contents

- 4 *Big Picture 101*
- 6 *Does a Second Job Pay?*
- 8 *Proper Premilking Procedure: Not a Waste of Time!*
- 9 *A Milker's Dozen: Thirteen Traits of a Good Dairy Farm*
- 10 *Cool Those Cows!*

*The #1 Way to Improve Your Dairy Operation:*

## Make This Year's Forage Crop the Best Ever!

**W**ant to know the three top recommendations for improving production, profitability, and long-term chances for success on the average Minnesota dairy farm?

1. Make good forage.
2. Make good forage.
3. Make good forage.

It bears repeating: If you are like 90 percent of Minnesota dairy farmers, one of the main ways you can improve your dairy operation is to *make the best quality forage you can.*

Why? Because high-quality forage makes milk, and lots of it. If you feed good cows poor forage, you are not giving them what they need to reach their top production potential.

## What's Good Hay Worth?

Making good hay is not just a matter of doing things right for the sake of doing things right. It's money in the bank.

Say you average a Grade 2 hay—relative feed value (RFV) around 107—with your current harvesting practices. By following the suggestions in this article, you ought to be able to bring the RFV up 20 points without too much trouble.

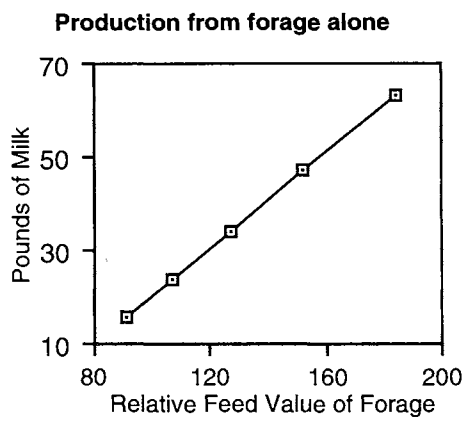
Assuming you feed no supplements, the difference in milk potential from the two quality levels is 10 lb/day. At a milk price of \$0.11/lb,

for a 50-cow milking herd this translates into a gain of *more than \$16,000 per year.*

Similar if not greater gains can be made by increasing quality even more. How? Following is a summary of scientifically proven techniques you can use to make good alfalfa forage. If you follow this advice for the rest of the 1992 growing season, you will have your best chance ever of bringing in a

top quality hay crop and maximizing the profitability of your operation.

*Continued on page 2*



## Minnesota's New Milk Pricing Law:

**EFFECTIVE AUG. 1, 1992, Minnesota milk processors must pay a minimum of \$13.20 per hundredweight for milk used in beverage milk products.**

The new state law is not expected to have a major impact on Minnesota dairy farmers. The

baseline is likely to exceed federal order minimum prices only during certain months of the year and the law does not affect prices paid for milk made into other products.

"If the law had been in effect in May 1992, it would have raised the legal minimum processor price for fluid use milk by 91 cents per hundredweight," says economist

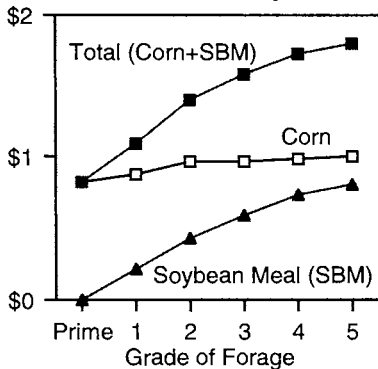
Jerome Hammond. "However, because fluid-use milk in Minnesota accounts for only a small part of total milk use, the program would have raised the Grade A milk producer price by only 16 cents per hundredweight." Also, he notes, the one-third of Minnesota producers who sell Grade B milk will receive no benefit from the law. ●

This archival publication may not reflect current scientific knowledge or recommendations.  
Current information available from University of Minnesota Extension: <http://www.extension.umn.edu>

# Forage

Continued from page 1

Cost of supplements for 60 lb milk/cow/day



**1. Test Your First Cut.** Start *today* by making arrangements to test the hay crop you just put in your barn or silo. (Your feed dealer or county extension agent can help you locate a testing service if you don't already have one.) If your RFV is 125 or above, the hay crop is good enough to feed to your milking herd. Keep up the good work!

If your first-cut hay crop is below 125, however, any efforts you can make to bring the quality up for the rest of the summer is money in your pocket.

“High quality forages will improve milk production and save big dollars in supplemental feed costs.”

—Jim Linn

| GRADE | RFV     |
|-------|---------|
| Prime | >151    |
| 1     | 151-125 |
| 2     | 124-103 |
| 3     | 102-87  |
| 4     | 86-75   |
| 5     | <75     |

**FORAGE QUALITY is expressed as an index number that takes into account various aspects of quality. You'll most often see it as relative feed value—RFV—or as a numbered grade. The bigger the RFV, the better the forage.**

**The forage you feed your milking herd should have an RFV of at least 125. If you are feeding lower-quality forage than that, you are reducing your cows' ability to reach their production potential.●**

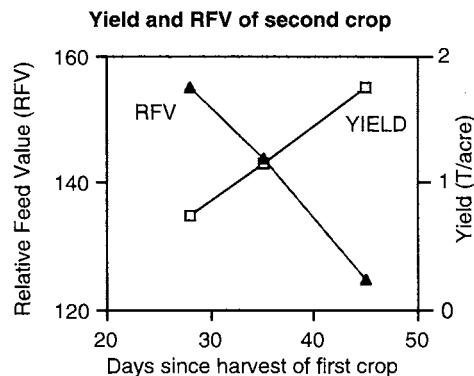
**2. Watch Regrowth for Insects.** Scout your alfalfa fields once a week to catch insects before they get out of hand. Your county extension office receives weekly updates from university specialists identifying the proper treatment for the circumstances in your area. Check with your extension office or your crop pest consultant at the first sign of infestation to determine the best way to handle the situation.

**3. Time Your Second Crop by the Calendar, Not by Maturity.** If you're in the habit of watching for first bloom to time your second cutting, get out of the habit fast. At this stage of

the summer insect damage can easily mask the bloom stage. Mark your calendar for 28 days after your first cut, and make your second cut within five days—regardless of what the weather's been like or how the field looks.

The longer you wait to cut your second crop of hay, the bigger the yield—but you'll pay for it in lost quality:

“If you wait a week or two after flowering



begins you may bring in more crop, but it won't do as much for your cows in terms of nourishing them for top milk production,” says extension nutritionist Jim Linn. “Remember, your goal is not maximum hay—it's maximum milk.”

According to extension forage expert Neal Martin, each day you delay harvest past bud stage can cost you the equivalent of \$10 per cow in lost production. His recommendation: Take your second cutting 28 to 33 days after your first cut, remembering that what you lose in sheer weight is more than compensated by the higher quality.

**4. Work With the Weather.** If you get good drying weather for second and third crop, great. But if the way the summer is progressing, you don't have a lot of confidence that you'll get the field-drying time you need to make hay the conventional way, don't just cuss the clouds. Consider your options:

- *Use a drying agent.* A drying agent such as sodium or potassium carbonate and water sprayed into the standing crop can reduce field-drying time of second and third crops, thus reducing risk of rain damage.

Drying agents will cost you about \$2 to \$6 per acre and require special equipment for application. The payoff is that you can bring the hay in up to 24 hours earlier. If the drying agents keep your hay from getting rained on, they're a good investment.

• **Make silage.** If you keep one eye on the weather and have the room in your silo, you can bring in a storm-threatened crop before it dries enough for hay by making silage instead.

Silage also is a good option to consider if weather prevents you from cutting as early as you should. Research has shown that milk production suffers less when you store late-cut hay crops as silage rather than bale it.

**6. Third Cut: Back to the Bloom.** Once you've made it past prime bug season, you can pay attention to field signs once again to time your cut. Take your third cut when alfalfa is at 1/10 bloom (the first appearance of flower).

**7. Wrapping It Up.** If you are in southern Minnesota or were able to start haying early this spring, you probably will be able to bring in a fourth cut in late fall. If the fourth crop flowers before September 1, cut. If it has not flowered by September 1, cut around mid-October and leave 8 inches of stubble. 🐄

Flag Leaf



### Timing the Cut for New Alfalfa

**IF YOU** have a new alfalfa stand with oats or barley as a nurse crop, let the stage of maturity of grain determine your timing. For best quality forage, harvest these fields at the boot stage, after the flag leaf (last leaf) is produced but before the grain head peeks out of the stem. ●

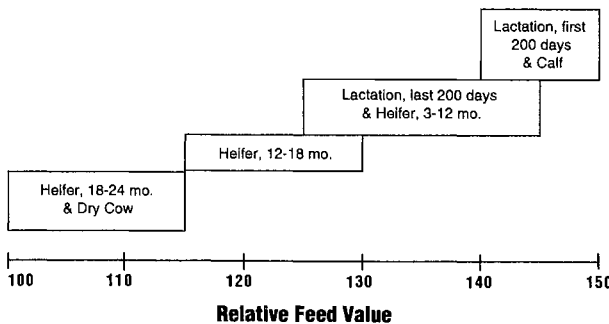
### What About Preservatives and Inoculants?

**HAY PRESERVATIVES** and silage inoculants are getting increasing attention for their ability to improve alfalfa storage. The payoffs for using them vary substantially according to each farmer's individual circumstances. Your dairy agent (see p. 12) can help you decide whether such products make economic sense for you. ●

### The Smart Way to Feed Your Hay Crop Forage

No matter how hard you try to produce prime forage every time, the weather and other factors beyond your control practically guarantee that you'll finish the growing season with a range of forage qualities.

Make the most of what you have by testing your forages monthly and then feeding the different qualities to various animals based on their individual nutrition needs. The following shows a strategy for feeding the various forage qualities you have to the different dairy animals on your farm. ●



### 5. Fertilize Between Second and Third Cutting.

Your forage needs food, too—especially if you plan to take four cuttings this year. If you have had a soil test within the past year, top-dress with P and K according to recommendations between the second and third cutting. If not, have the field tested first.

### Should I Use Liquid Manure on Alfalfa?

**IT'S BETTER NOT TO,** says extension forage specialist Neal Martin. But if you choose to do it anyway, be sure to use less than 3,000 gallons per acre and apply right after cutting and before a good rain. ●

### Forage Quick Tip:

**IF YOU'RE** making silage, get it into the silo as quickly as possible after chopping. Silage left sitting in the wagon loses carbohydrates, reducing the quality of the end product.

# Big Picture 101

*Ag professionals go "back to school" to learn how to help you improve your farm business*

If your feed-mill operator pops up with a bit of advice on your herd culling strategies this summer, don't just assume he spent a little too much time in the sun.

More likely, he was one of the 300-plus ag professionals who attended the Minnesota Extension Service's six-week Ag Professionals Workshop this past winter to learn how they can help you, the producer, improve your operation.

Suppliers, veterinarians, bankers, and others from across Minnesota took the opportunity to develop a big-picture approach to solving dairy farm problems. Participants met for four hours once a week to address various aspects of dairying—whole-farm diagnostics, business management, milk quality and animal health, genetics, nutrition, and reproduction.

"Our goal was to help ag professionals build problem-solving skills beyond those they already have in their own areas of expertise," says extension agricultural economist Merv Freeman, who coordinated the workshops. "By working in teams, they were able to tap each other's knowledge and skills and develop solutions they might never have found on their own. We're hoping they will apply their new knowledge in their work with dairy producers, and will continue to cooperate with other ag professionals to solve problems they encounter on a day-to-day basis."

The training was part of the Dairy Initiatives Program, a long-term extension effort that began last fall to bolster family dairy operations in

Minnesota. It was built on the notion that people who are in regular contact with producers are in the best position to get research-based information on what works and what doesn't out to the farm, where it can do some good.

"We get a better shot at reaching farmers," says Jerome Burkel, a northwestern Minnesota feed dealer who participated in the training "We see them a minimum of every two to three weeks, and we see where they've got some problems." Burkel says that when production drops, feed is often the first to get blamed—so he hears about just about everything. With the training, he now has a better perspective from which to guide farmers with difficulties.

Many who participated in the workshops already have had plenty of chances to put their new knowledge to work. Bill Sanborn, a Pine Island banker, says he's been using the information he gained to help in initiating and reviewing loans. Before he took the class he knew little about angles of dairy farming such as crops and equipment. Now, he says, he is much better prepared to look at the "total package" of what a farmer is doing.

For Nicollet veterinarian Jeff Paasch, on the other hand, the "dollars-and-cents stuff" was the most enlightening. Paasch says he also appreciated the emphasis on producing quality forage. "People that want to remain on the cutting edge are always asking questions about management decisions. Perhaps I'm better able to answer them after attending the class. There was something to pick up in every session." 🐄

## Show & Tell



Don Breneman

**THE DAIRY INITIATIVES DEMONSTRATION FARM** program hit the ground running this past spring as diagnostics teams began visiting farms and preparing recommendations for improving them during the months ahead. Some 40 farms around the state have been selected by local dairy agents to participate in the program, which is expected to provide specific examples of ways to improve the viability of Minnesota dairying. Here, a team led by dairy agent Warren Sifferath (center) checks out the calf facility at the Miesville, Minn., farm of Herb and Mike Peine (third from left and second from right, respectively). ●

## Burkel Grain & Advice

Ever since Jerome Burkel attended the Ag Professionals Workshop, the copy machine at Burkel Grain has been humming. One day it's duplicating a questionnaire to help a local dairy family analyze its cash flow. The next, it's cranking out copies of a fact sheet. Walk into the store and you may well leave with not only your load of feed but with some free advice on lowering your somatic cell count as well.

Burkel, president of Burkel Grain Service in Greenbush, Minn., was one of 20 or so representatives of the northern Minnesota dairy industry who participated in the workshop in Bemidji this past winter. Since then he's been passing along his newfound knowledge, helping the dairy farmers he sees make a better go of it in their individual circumstances. Of his 65 clients, he figures 50 already have gotten some advice based on the classes. "And the other 15 will get it whether they want it or not," he adds with a twinkle. "It's just totally valuable."

Burkel says he started sharing things with producers after the very first class. It got to the point where customers would ask him each time he saw them what he'd learned that week. "It brings out a much closer working relationship with the customer," he says. "There's such a wealth of information there."

As an example, Burkel tells of two farmers who mentioned they were thinking about starting up a partnership. He pulled a questionnaire from the thick binder that held his



Greenbush Tribune


along the way you develop habits and kind of slip. The course brought out a lot of the business management end of it—showed how important the records are, a lot of things we know but don't practice." The information he passes along, he says, "just hones everybody in to watching things a little closer."

A second-generation operator of a family business himself, Burkel is particularly sensitive to the unique challenges faced by those running family farms.

"I understand what it's like

to be in a family business. I've been through the generation change," he says. "The biggest thing is keeping communication open, to let kids make mistakes. My dad's attitude was, as long as you learn something, it's fine. I hated it at the time. But in looking back, what a school he put me through."

Burkel says that since finishing the workshop he finds himself working more closely with other ag professionals, building on the interdisciplinary approach that was the heart of the training. Along with other ag professionals in the area, he and dairy agent Sheldon Erickson are planning to offer the class to producers this fall.

"Farmers are anxious to get the information," he says. "It's available at the extension office, but the biggest thing is to get them into discussion and they solve a lot of their own problems." 

class handouts and gave it to them to complete. "It opened up communication," he says. "They decided to stop and think about it for a couple of months. I think they'll still go into it, but much more enlightened than they were."

To attend the sessions Burkel drove 300 miles each evening across northern Minnesota in the dead of winter—and he says he'd do it again in a minute. "As a service professional, I feel it is very important to keep up with things that are going on," Burkel says. "The time spent was extremely worthwhile. It gave me a lot of understanding about where farmers are coming from."

One of the biggest benefits of the course, Burkel says, is that it encouraged ag professionals—and the producers they come in contact with—to take a second look at everyday practices. "We go plodding down the road in our trenches and we don't look over the bushes to see if there's a better way," he says. "A lot of things the producers know, but

*Beyond the Bottom Line:*

# Does a Second Job Pay?

**A**s a dairy farmer, you probably are getting hit from all directions right now. Milk prices are down. Both farming and household expenses continue to rise. Money is tight—and sometimes it seems the harder you work, the tighter it is.

For many farm families, the most obvious way out of the money pinch is to have one or more family members find work off the farm. But before you start job-hunting, says extension family resource specialist Sharon Danes, be sure

to weigh your decision carefully. Too often, she says, people see only the paycheck, and forget to look at how a second job will affect other aspects of their lives.

“Families should consider job-related expenses and noneconomic costs as well as the income and other benefits when deciding whether a second job is the right choice for them,” Danes says. “They need to remember to look at all angles, and to do so as a family, because the whole family is going to be affected.”

Danes suggests you as a family work through the following five steps as you weigh the pros and cons of an off-farm job:

## **Step One: Identify the Problem.**

Start by defining why you are considering an off-farm job. This might seem pretty basic—but once you start writing things down, you may find things aren’t as obvious as they first seemed.

Is the problem lack of income? Or lack of cash? For the person considering the second job, dissatisfaction with the day-to-day routine or the need to feel more important or more valued in the family may be major considerations.

**BE HONEST.** If you don’t identify the problem accurately, there’s a good chance that the solution you choose won’t really solve it.

## **Step Two: List Your Options.**

Take out all the stops and brainstorm possible ways to solve the problem.

Might getting by on less money be a realistic way to fight the crunch? Researchers have found that a surprising number of low-earning farms actually spend more than other farms, yet produce lower yields. People who take time to have their farm accounts analyzed (you can do so through your county extension

office) often are amazed by the opportunities they find for better cost control. Jumping right into a second job, on the other hand, can make controlling costs even more difficult.

If earning more is the only choice, how many ways can you think of to do so? Maybe one of you could get a daytime job in town. Perhaps an evening shift would disrupt your family’s routine a bit less. How about going back to school to increase your earning power down the road?

Get creative! You could all make cornhusk dolls and sell them at craft shows in the Twin Cities . . . or have the kids start a roadside vegetable stand . . . or hope there’s buried treasure on your property and spend your time digging up the lawn . . .

Remember the guy a few years back who got rich putting stones in little boxes and selling them as pets? Your options are only as limited as you make them.

## **Step Three: Weigh Your Choices.**

Okay, time to get real. There probably isn’t buried treasure out there, so move that one to the bottom of the list. But spend some time thinking carefully about the other options—including making no change at all.



John Bush ©92

## HELP!!!

**DO YOU FEEL** like you’re juggling twelve balls and a couple of raw eggs as you try to weigh the various costs and benefits of an off-farm job?? If so, help is as close as your county extension office.

**Does the Second Job Pay?,** a computer program that helps translate information about your individual circumstances into a clearer picture of whether a second job is right for you, is available in every county in Minnesota. Contact your county extension agent for details. ●

## Make a List

The decision to get an off-farm job is a big one. It's very important that you look at costs as well as benefits, at personal considerations not easily measured in dollars as well as economic ones, at long-term as well as short-term impacts on your family. Some possible angles to eye:

### ECONOMIC BENEFITS:

- better cash flow
- more income to meet expenses
- Social Security benefits
- fringe benefits, including health care
- increased ability to support self in event of death, divorce
- other \_\_\_\_\_

### ECONOMIC COSTS:

- child care
- clothing
- transportation
- taxes
- hire help/farm or business
- hire help/home
- education costs
- special tools/equipment
- other \_\_\_\_\_

### PERSONAL AND FAMILY BENEFITS:

- better division of household labor (perhaps)
- increased self esteem for the new job-holder
- personal growth
- socialization of kids
- revised work standards
- increased ability to keep work skills current
- other \_\_\_\_\_

### PERSONAL AND FAMILY COSTS:

- conflict in values and goals
- added stress or pressure
- less time for community/church/school activities
- less time with kids
- less involvement in and support for the farm/business
- seasonal variation in work
- less freedom to set own schedule
- perhaps some loss of family "connectedness"
- other \_\_\_\_\_

What are the relative advantages and disadvantages of the various alternatives? How flexible are the alternatives if your circumstances change? How do they fit in with your goals and philosophies? How will they affect the farm operation? Family life? Which makes most sense for *your* family?

The accompanying box provides some ideas on what to look at as you weigh your choices. Your county extension agent also has a computer program, *Does the Second Job Pay?*, that you can use right in the office to weigh the various economic angles of an off-farm job.

### Step Four: Decide and Do.


You've looked at the up and down sides of each of your options. Go through the list, asking yourselves which solves the problem you identified in Step One with the fewest disadvantages. Perhaps a combination of two or three would work best for you. Now's the time to make the choice.

Then follow through. Because you took time to think about the alternatives, you can feel good about your decision, even if it is a tough one.

Don't expect your choice to be without negatives. Because you reached the decision as a family, there probably are angles on which you personally had to compromise to reach an agreement. But you as a family should be able to feel good about the overall choice. Recognize that through this step-by-step process you have done all you can to minimize the disadvantages. You truly are doing the best you can under the circumstances.

### Step Five: Evaluate.

You thought you were done, didn't you? But a big step in making a decision is looking back periodically to see how it's working. If things aren't turning out as you thought they would, or if your situation has changed, you may want to consider doing things differently.

Making a change sometimes isn't so scary if you have agreed to assess your decision later. That way you have an "out," without calling it a failure, if the option doesn't work well. 

## The Trickle-Down Effect

If a member of your family takes a job off the farm, your cash flow won't be the only thing to change. In making your decision, be sure to look at how the change might "trickle down" to other parts of your life. For instance:

- **POWER AND CONTROL**—Often the person earning the extra money gains power or control or authority in the family. How would a second paycheck affect relationships in your family? Would the change be for the better or for the worse?

- **DECISIONMAKING**—Family members with the most power or control frequently hold the most say in making decisions. If the power balance changes (see above), will the way decisions are made in your family change, too? How will various family members feel about that?

- **RESOURCES**—With a second paycheck, your family's money resources probably will increase. But what about other resources—time, energy, talents?

- **VALUES, ATTITUDES, GOALS**—A second job probably will cause you all to make some shifts in what you see as important, in how you approach life, in what you seek. Will the changes be positive ones for you? ●



# Proper Premilking Procedure:

*Not a Waste of Time!*

**H**ow long do you spend prepping each cow before you milk—five seconds? Ten? Fifteen?? New research shows that a few more seconds with each cow is well worth the extra effort due to the payoff in milk quality, udder health, and milking efficiency.

Washing the udder serves several purposes. It removes manure and other contaminants from the teats. It kills bacteria. It also stimulates letdown, making the milk flow faster and easier once the machine is on.



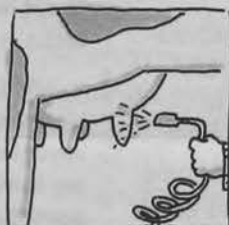
Drs. Ralph Farnsworth and Jeff Reneau explaining Minnesota Method to Professional Milker Debbie Schwanz. It took thousands of observations to develop Minnesota Method.

Don Breneman

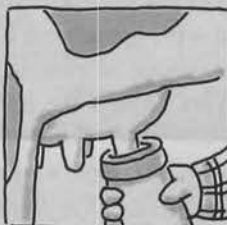
But just washing any old way doesn't make it. This is one area where you'll find technique really counts. Ten seconds spent washing a cow improperly is ten seconds wasted. Twelve sec-

## The Minnesota Method

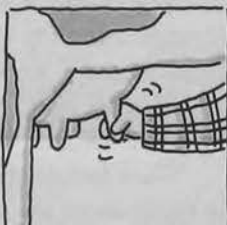
RESEARCHERS AT THE University of Minnesota have developed a premilking routine that bring together the "Three C's" into a single highly effective technique. The procedure uses a low pressure teat spray system cleaning or a standard teat dip cup with a predip as a cleaning solution. It goes as follows:



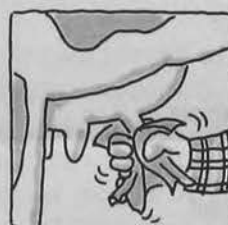
1a. Spray each teat with a low pressure teat spray unit.



OR  
1b. Dip with teat dip.



2. Using a glove on hands clean teats with three to four vertical hand motions, then use the thumb and first finger in one to two horizontal motions across the teat end to remove dirt and manure. Forestrip to check for clinical mastitis.



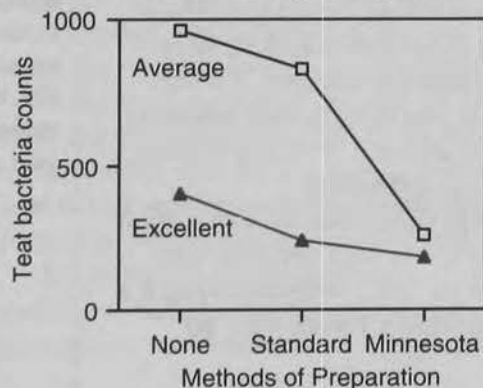
3. Allow at least 30 seconds, then dry teats with a single service towel and continue your milking procedure.

### LIKE TO SEE HOW IT'S DONE?

A videotape demonstrating the Minnesota Method premilking routine is available from 3M Animal Care Products, St. Paul, MN 55144-1000 for \$7.50. ●

This procedure takes 3 to 5 seconds per teat—15 to 20 seconds per cow. It stimulates good milk letdown, and increases the removal of organic matter and teat dip coverage over conventional methods.

Average or excellent environment and milking management



onds spent doing it right may be the best-spent twelve seconds of your day.

### THE THREE C'S

There are many different techniques for preparing the cow for milking. Whatever method you use, it's important that you pay close attention to the "Three C's" of proper premilking preparation: completeness, consistency, and cleanliness.

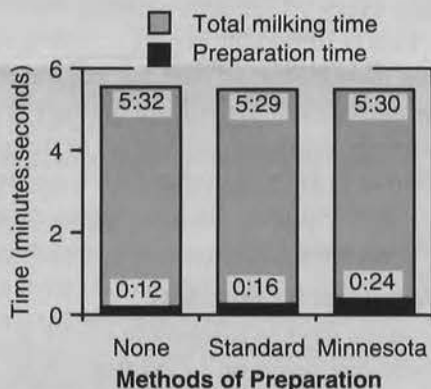
**Completeness.** For good teat sanitation and milk letdown, you need to spend 15 to 20 seconds washing, forestripping, and drying each cow. If you're a typical Minnesota dairy operator, that's 5 to 13 seconds more than you're used to. How-



John Bush '92

"Don't forget to wear a shower cap on your udder... I'm worried about mastitis."

ever, research shows that even doubling prep time probably doesn't add significantly to the overall milking time. In fact, proper preparation can even speed milking in late lactation cows.



**Consistency.** Cows like things to be predictable—so the more routine you can add to their lives, the better off you both will be. In one study, milk yield increased 5 percent when the milking routine was standardized. Once you establish a proper premilking routine, use it every day on every cow for top milking efficiency and productivity.

**Cleanliness.** Bacterial contamination of the udder and teat is directly linked to milk quality and udder health. Good washing and drying techniques can cut bacteria by 75 percent. For you, that means a lower bacteria count in the bulk tank and better chances that you can keep your cows free of mastitis. 🐄

## A Milker's Dozen

### Thirteen Traits of a Good Dairy Farm

Do you realize that having fun is a key ingredient in the recipe for a profitable dairy operation?

A positive attitude plays a big part in making profits, says extension farm management specialist Merv Freeman. Based on observations of hundreds of farms over his 30-year career, Freeman has drawn up a list of characteristics common to profitable operations. Among his findings: A good outlook on things is one of the top traits shared successful farmers.

Freeman suggests that to improve your own profitability, you use the following rules of thumb as you make day-to-day decisions on your farm:

- Make farming fun!—maintain a positive attitude
- Practice cost control (watch your capital investment and operating expenses, particularly in the areas of feed storage and handling, crop machinery, housing, manure storage and handling, and land)
- Keep your total farm investment per dairy cow unit at \$5,000 or less
- Keep your total farm investment at no more than \$2 for each \$1 of farm income
- Keep your interest expense below 10 to 12 percent of total farm income
- Produce good quality forage, test forages and grain, and balance rations for each group of cows or heifers
- Milk at least 38 cows (42 in southern Minnesota)
- Keep your herd production average at 17,000 lb/cow/year or more
- Sell at least 650,000 lb/year of milk (700,000 in southern Minnesota)
- Be on DHI or an equivalent program
- Keep your somatic cell count (SCC) to 225,000 or less
- Keep calf death loss at 10 percent or lower
- Have service technicians check your milking machine equipment every six months or after 1,250 hours of use



"Having fun and maintaining a positive attitude keys to profitable dairying."

—Merv Freeman, extension farm management specialist

# Cool Those Cows!

*By avoiding heat stress, you can maximize production, minimize disease*

**W**hen it comes to running a dairy business, the heat of summer is more than just a matter of comfort. Besides making your cows—and you—

in the thermometer, Anderson says, because the added stress gives germs a chance to catch the cow with her defenses down. Not only that, disease organisms multiply more rapidly in a warm environment, so there's more of them to cause problems. And the increased water intake heightens chances of diarrhea and other digestive-tract problems.

## WHAT TO DO ABOUT IT

Fortunately, there are several things you can do to reduce the risk and severity of heat stress in your herd. Some are relatively quick and cheap. Others will cost you some time and money. But, as Anderson points out, it's important to look at that as an investment. If heat stress is an ongoing summer problem in your herd, what you spend solving it will likely be paid back many times over in reduced production problems.

### 1. Maintain proper ventilation in your barn.

Anderson recommends that you keep the air flowing in your barn at a rate that allows it to fill completely with fresh outdoor air 40 times an hour—once every 90 seconds—during the summer. This is important because cows give off lots of heat themselves, so barn temperatures can easily rise above even the stifling outdoor levels. With a properly designed ventilation system, you should be able to keep the temperature inside the barn from climbing more than 5 degrees above the outside air temperature.

### 2. Use stirring fans for extremes.

There are some days in Minnesota where all the fresh air you can find won't cool your cows enough to prevent a drop in production. On these days you'll need to kick in some stirring fans to keep air moving around the cows. Anderson recommends placing stirring fans 30 feet apart over the feed bunk or above tie stalls or stanchions. Turn them on when barn temperature exceeds 85 degrees or so. Or, you might prefer "tunnel ventilating"—placing big fans on one end of the barn to send air down each side of the barn.

Is it worth the extra electricity? That depends on your individual circumstances—what you pay for electricity to run the fans, and how much your cows are being affected by the heat. But Anderson cites the example of one farmer who was having problems with extreme heat in his tie-stall barn. He added a single fan at one end of the barn—and saw his production rise 6 pounds per cow as a result.

## Hot Stuff

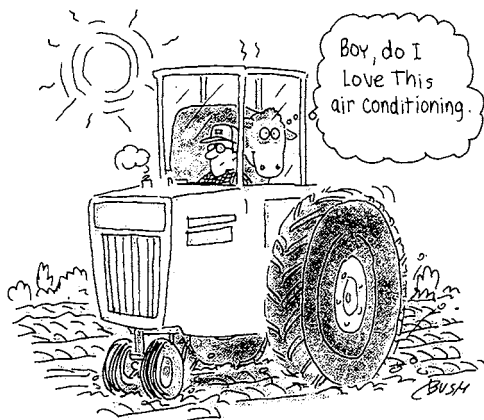
**What is heat stress, and when is it likely to occur?**

You should be watching for indications of heat stress—a cow's physiological response to excess heat—if barn temperatures top 90

degrees, says University of Minnesota veterinarian John Anderson. This doesn't necessarily require super-hot outdoor temperatures, either: A cow gives off 2,500 to 3,000 BTU per hour just from its own metabolic processes, so temperatures in a barn can quickly climb above what they are outside.

Humidity makes a difference, too. "If the humidity is low, you may be all right," Anderson says, "But if you have high humidity in addition to heat, things go to pieces in a hurry."

The first symptoms of heat stress you'll probably see are a drop in feed intake and increase in water consump-



tion. Your cows also may begin to breath faster and produce more urine. When you see these signs, it's a safe bet that your cows are beginning to feel the effects of the hot weather, and, unless you cool them off,

you will see a production drop.

"If the heat spell only lasts two to three days, it's not a problem," Anderson says. "If it stretches up to a week, then you're in trouble. The cows get beyond a point where they can physiologically handle it and still produce well."

Anderson emphasizes that with heat stress—as with so many other aspects of dairy herd management—an ounce of prevention is worth pounds of cure. He advises farmers to stay ahead of the problem by making sure proper barn-cooling measures are in place and working before they hit the hottest days. ●

miserable, high temperatures can cut into production and increase susceptibility to disease.

"As the environment starts to warm up, the cow starts to consume more water, and feed intake decreases," says John Anderson, a Cannon Falls veterinarian who also is a professor of veterinary medicine at the University of Minnesota. "The drop in fiber intake results in decreased butterfat. Then total production drops as well, because the water cows consume goes to cool them rather than to make milk."

The risk of disease goes up with the mercury

**3. Take advantage of the great outdoors.**

The natural ventilation found outside the barn is the best environment for your cows in extremely hot weather—just be sure there is shade available to shelter them from direct sun. Many operators who use tie stalls or stanchions let every other cow out of the barn during very hot nights to decrease the amount of heat produced in the barn and to increase circulation between remaining cows.

**Hit the Showers?**


**IN HOT, DRY southern climates, many dairy farmers use water cooling systems to prevent heat stress. But what's good for Arizona cows is not necessarily the solution for Minnesotans, Anderson says. In our high humidity the added moisture makes things wetter, but not necessarily cooler. Not only that, water dripping down a cow's back can carry bacteria to the teats, increasing the risk of mastitis.**

**Anderson cites the example of one producer who placed a garden soaker hose on the ceiling of the parlor return alley to keep manure moist and easy to remove.**

**"The cows stood beneath this hose and became soaked. The organisms on their haircoat were washed down their sides, removing the barrier teat dip and depositing bacteria at the recently milked teat ends. Coliform mastitis was rampant in the herd. But when the hose was removed, coliform mastitis ceased immediately," he reports.**

**The conclusion? "There are applications for sprinklers in some free-stall barns, but they must be closely monitored and controlled," Anderson says. For most Minnesota dairy farmers with cows housed in tie stalls or stanchions, that means water the garden if you want—but not the cows. ●**

**4. Remember the basics.**

Make sure your cows have easy access to plenty of fresh water. Keep things as clean as possible to minimize the disease problems and fly population buildup associated with heat. Feed high-quality forage to keep nutrient intake as high as possible. Energy density is important during hot weather to maximize production. 

**Ventilating an Existing Barn**

*Helping your barn keep its cool means more than setting up a bunch of fans to blow things around. To get the recommended 40 air exchanges per hour, you'll need properly sized and placed fans AND properly designed air intakes that allow fresh air to enter the barn.*

**Step 1: Install Fans.** Fans are rated according to the cubic feet of air they move per minute. Use only single-speed, rated fans—otherwise you will have no way of telling whether the fans you have are moving the amount of air you need them to move to maintain proper ventilation.

Calculate the fan sizes you need by first determining the volume of your barn (width x length x height). Divide this figure by 15 (4 air exchanges per hour = 1 air exchange every 15 minutes) to determine winter ventilation capacity. Multiply this figure by 10 to determine the summer capacity (40 air exchanges per hour). This last number is the total combined fan capacity you need for your barn.


When choosing individual fan sizes, divide the summer ventilation fan capacity between two or more fans to allow for lower capacities during spring and fall when you'll need less ventilation.

For example, if your barn is 36 feet wide, 160 feet long, and 8 feet high, install fans that can provide a winter exchange rate of  $(36 \times 160 \times 8) / 15 = 3,000$  cfm and a summer exchange rate of 30,000 cfm (10 times the winter rate) as follows:

- one 3,000 cfm fan with a duct running to 15 inches above the floor (runs continuously in winter)
- two 6,000 cfm fans with a duct running to 15 inches above the floor (thermostatically controlled for use in spring, summer, and fall)
- one 15,000 cfm fan with no duct (thermostatically controlled summer use)

**Step 2: Provide Fresh-Air Intake.**

Along with the fans you'll need a fresh-air intake system you can adjust for various seasons and fan combinations. A good way to make this is to cut a 3-inch slit into the mow floor along both walls of the barn except for 10 feet above each fan. Cut the strip of flooring you removed to 2-1/2 inches and apply a nylon belt to it on the side away from the barn wall. This nylon belt "hinge" lets you adjust this slot from the inside of the barn with blocks to seasonally adjust air intake.

For more information, ask your county extension agent for a copy of *How to Plan a Mechanical Ventilation System for the Dairy Barn*, Minnesota Extension Service publication M-128 (1982). 

**Before You Build.**

**THINKING ABOUT putting in a new barn? By making ventilation a top consideration in your design, you'll save yourself countless headaches in the years to come. The following publications, available through your county extension office, can provide some valuable guidelines:**

***Free-Stall Housing for Dairy Cattle (AG-BU-1316)***

***How to Plan a Mechanical Ventilation System for the Dairy Barn (M-128)***



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