

MSU Dairy Farm

With five full-time employees and a number of student staff, MSU Dairy Farm Manager Bob Kreft is quick to note that it took a true group effort for the farm to achieve the cooperative's highest honor in milk quality—MMPA's Top Quality Award. Several members of the team accepted the honor earlier this year at MMPA's State Annual Meeting in Lansing.

"It is a whole team effort," Bob says. "Whether or not they work in the parlor or clean the stalls, everybody who works here and with our cows is an important part of keeping milk quality high."

The herd at the MSU dairy in East Lansing achieved an average somatic cell count of 54,833, PI bacteria of 1,583 and Raw bacteria of 1,000. The milking herd consists of 150 head of registered Holsteins with a rolling herd average of more than 28,000 pounds of milk. Their high-quality milk and management practices also earned the MSU Dairy a platinum level ranking in the National Dairy Quality Awards recognition presented by NMC.

"Bob does a good job of utilizing the people and resources available to him and makes sure the employees and resource people all know that they are integral components to the success of the team," Tom Herremans, MMPA Mastitis Management Supervisor says. "To have employees that think like owners and take a personal pride in their effort to produce the highest quality milk does not

happen by accident. From what I have seen of the employees at MSU, they are committed on a personal level to low SCC and milk quality. The fact that they understand the

udders are brushed or wiped free of manure or bedding. To prevent an accumulation of bedding, udders are singed six times per year.

"You can still get cows with long hair clean during milking, but it's a lot easier if you singe that hair off," Bob says.

Once the large matter is brushed off, teats are sprayed with a hydrogen peroxide-based predip that is massaged on teats and teat ends for 10 to 13 seconds. Three to four cows are done in a set; with a goal of having 50-60 seconds of contact with the dip before wiping it off with an individual cloth towel, utilizing all the surface area of the towel. The milking unit is then manually attached, and is removed by automatic take-offs at milkout.

Anyone milking always wears gloves throughout the entire milking procedure.

"The number of different people involved in the farm operation actually presents a challenge to setting up procedures and milking routines that are consistent no matter who is performing the tasks," Tom says. "While the challenge of working with employees that have no ownership in the farm is typical of many farms today, the MSU Dairy Farm seems to be successful at creating an atmosphere that fosters a willingness to work together to accomplish common goals."

While the exact milking routine varies slightly depending on how many people are milking at a time, the MSU team focuses on the ultimate goal of getting the bacteria off the teats and achieving a good



From front row: Gail Carpenter, Erin Nicklaw, Molly Peebles, Ray Lee, Alex Scott, Adam Blumerich, Nate Lippert, Bob Story, Gordon Galloway, Joe LeSarge, Jim Kunisch, Roxanne Ernst, Matt Costigan, Liz Saletta, Randy Bontrager, Rob West, Charlie Kunisch, Bruce Kurzhals, and Bob Kreft.

quality goals for the farm and are aware of the benchmarks to measure their performance as they go about their work is a credit to their personalities and even more to the way Bob involves the employees in the ownership of the effort to produce the best quality milk possible."

In the Parlor

Cows are milked twice daily by a combination of full-time and student employees at 4 a.m. and 2 p.m. in a double-seven herringbone parlor.

"The 14-hour interval works best with our labor, the morning crew starts at 3 a.m. and we try to get the afternoon crew out by 5 p.m.," says Bruce Kurzhals, a full-time employee at the farm.

Cows enter the parlor, any dirty

Continued on page 16

milk letdown.

Teats are post-dipped with a cup containing Masticare, a emollient-based conditioning dip.

“You have to have healthy, normal teat ends, or you won’t have a normal healthy cow,” Bob says. “Were really pleased with how well the post-dip conditions teats and teat ends.”

Cows with high SCC in a particular quarter are marked with a leg band denoting which quarter is high. That quarter is milked with a quarter milker, and the inflation used for that quarter is sanitized before being attached to the next cow in the milking string.

Bob believes the quarter milker has made a difference in overall

bulk tank SCC on the farm. A story in a past *Messenger* about a former MMPA Top Quality Award Winner inspired Bob to learn more about and eventually begin using the quarter milker at the MSU farm.

“It’s amazing how such a small quantity of milk can make such a difference on your bulk tank counts—up to 20,000–50,000 SCC higher in the whole tank from just one high-count quarter,” Bob says.

To keep a close eye on bulk tank counts, the farm runs daily specials through MMPA, for bulk tank cell count, Raw and PI bacteria. The results are e-mailed to the farm.

“We print off the results and put them on the break table,” Bob

says. “We also put it on the calendar in the break room so the whole crew can see how we are doing each day. Getting the cell counts so quickly—within a day—helps keep us on top of it.”

Looking out for and Treating Mastitis

Cows in the milking string are individually DHI tested every 28 days. Those that constantly appear on the “hot sheet” are tracked closely. Any “hot” cow is tested with a CMT paddle to determine which quarter is infected, and either milked with a quarter milker until her cell count is down, or she’s removed from the milking string and treated with antibiotics.

Sterile milk samples are taken from cows with elevated counts and sent to MSU’s DCPAH to identify which mastitis pathogen is causing trouble. Depending on the severity of the infection, the MSU Dairy Farm team determines whether or not to start treating the cow right away.

“We wait to treat subclinical cows until after we get the test results back if we think we can knock out the bacteria,” Bob says. “If we decide to treat the subclinical cases, we use an intra-mammary product and treat them systemically.”

Medium to severe clinical mastitis is treated right away, before test results from the cow’s milk sample are back. Once the team knows what type of mastitis organism they are dealing with, they adjust the treatment accordingly, if needed. Severe or acute clinical mastitis cases are treated with an intra-mammary product, systemically, and with Banamine, as well as given fluids.

Milking Equipment

The milking system undergoes annual checks from the manufacturer as well as special

Managing for Quality

Below are several management practices the MSU Dairy Farm team says make a positive impact on milk quality:

- Well-cared for teats and teat ends. MSU Dairy Farm uses an emollient-based conditioning post-dip.
- Clean and dry bedding and housing. Barns are scraped and wet bedding is removed four times daily. A layer of lime is placed on mattresses twice per day prior to bedding with kiln-dried sawdust.
- J-5 mastitis vaccine. The J-5 vaccine is administered six times per year to all dairy cows. In addition to receiving two shots before calving and one after calving, they are also vaccinated quarterly. Research has shown a six time per year dosage rate is an effective tool to reduce mastitis in the herd.
- Orbeseal administered at dry off. Orbeseal seals off the teat, creating a barrier against any bacteria trying to get in.
- Quarter milkers. The farm uses quarter milkers to keep high count quarters out of the bulk tank. The MSU Dairy Farm staff have noticed that leaving very high count quarter out of the tank can make a big difference—up to 20,000–50,000 SCC—in overall bulk tank SCC.
- DHI “Hot Sheet.” Cows are DHI tested every 28 days and the staff keeps a close watch on cows with high counts.
- DeLaval SCC tester to sample milk between DHI tests. The dairy farm staff says the cell counter is great for quickly identifying high count cows as well as knowing when cows are back to normal.
- Utilize improved milking procedures. Milkers at the farm make sure a peroxide-based teat dip is massaged onto the teat and across the teat end, ensuring complete coverage.

checks if someone working with the system thinks there is something wrong. Bob believes in changing milk inflations at half their rated lifespan to ensure a good milk-out. For the MSU farm, that means inflations are changed every three weeks.

“If you notice a big improvement when you put new inflations on, you’ve waited too long,” Bob advises. “We think it makes that much of a difference for a good milkout.”

Dry Treating to Prevent Mastitis

At dryoff, Quartermaster, Orbeseal, T-Hexx, a J5 mastitis vaccine and a Calf Guard vaccine are administered to all cows. All cows on the farm are given the J5 mastitis vaccine six times per year—twice before calving, once after, and quarterly.

“Research conducted by MSU’s Dr. Ron Erskine has shown that you get increased effectiveness with each additional J5 shot,” Bob says.

The MSU Dairy Farm team credits Orbeseal for preventing mastitis infections in cows just after dry off and right before they calve. About three weeks prior to calving, cows and heifers udders are singed.

Pre-fresh cows sometimes begin dripping milk, which the MSU Dairy Farm team has found can lead to poor quality colostrum at calving time.

“When we see cows due to calve start dripping milk, we’ll start pre-milking them,” Bob explains. “We started that because we notice that if they leak prior to calving, the colostrum isn’t very good. I think it is better to milk her twice a day if she leaks, and test the colostrum from the first milking to freeze for the calves.”

“We also think the udder health benefits if we start milking when they’re leaking. Sometimes their milk will become salable before they calve, as long as they test free of antibiotics.”

Determining which cows are leaking is a big advantage of the tie-stall environment most of the cows are housed in. It’s easy to notice which are leaking without sorting through a group of 30 cows, says the MSU Dairy Farm team.

Fresh cows are first tested for antibiotics and then their milk samples are tested for SCC with the farm’s DeLaval Somatic Cell Counter. The cow’s SCC has to be under 350,000 before their milk is allowed in the bulk tank.

“You’d be surprised to see how many cows and



Assistant Manager Rob West, right, and MSU student employee Andrea Steele ensure the herd has clean and dry bedding.



Cows with high SCC in a particular quarter are marked with a leg band denoting which quarter is high. That quarter is milked with a quarter milker. The inflation used on that quarter is sanitized before being attached to the next cow in the milking string.



The dairy farm staff says the DeLaval SCC tester is a great tool for quickly identifying high count cows and for learning when cows are back to normal.

Continued on page 18

heifers calve with a high count—and many of those don't have mastitis," Bruce says. "The cell count goes down pretty rapidly—usually the count is under 350,000 between two and four days, assuming they don't have an actual clinical mastitis infection."

Dry, Clean Housing

"It is noteworthy that the MSU facility is a mixture of housing facilities that are not the newest, proving that a working dairy can achieve excellence without the fanciest of facilities," Tom says. "This illustrates that it's the people that make the difference, not the age of the facility. The employees are the ones that make sure the cows are clean, well cared for, and milked properly with an attention to detail."

Most of the milk cows are housed in tie-stalls with mattresses filled with shredded rubber and bedded with lime topped with kiln-dried sawdust. Wet bedding is removed four times per day; the total bed is cleaned out and re-bedded twice a day. Cows in mid-to late lactation are housed in a slatted floor freestall barn.

"We think the mattresses in the tie stalls do some good for the cow's feet and legs," Bob says. "We also strive to keep the cows clean and dry—wherever that cow lays her udder, that's what makes a big difference."

Breeding

Getting the cows bred and raising healthy calves are important parts of keeping milk quality high at the MSU Dairy Farm. The 150 cows and 150 replacements housed there are all registered Holsteins.

"We try to do a good job getting cows bred and raising calves so we have plenty of replacements coming into the herd," Bob says. "This allows us to cull for udder health

reasons when needed."

The MSU Dairy Farm team has found that genetics plays a role in milk quality, noting they've noticed a correlation between cows that have lower production and higher cell counts. When mating dams with sires, the team stresses breeding for healthy udders.

"We breed for udders that are high, tight and out of the danger zone," Bob says. "If they don't have a healthy teat end, they can be treated one week and have an infection the next. We've made a lot of progress breeding for healthy udders."

Sire summaries now include Somatic Cell Scores (SCS), something that the MSU Dairy Farm has also found to impact the herd's future SCC.

"We're not used to looking at such small numbers—the SCS range on the sire summaries are from 2.6-3.3," Bob explains. "Such a small increment can make a big difference with the cattle you are working with."

Working with Research Cows

Being on the cutting edge of research can be beneficial, as was the case in the J5 mastitis vaccine, but it can also pose challenges. Much of the research conducted at MSU involves dairy nutrition, which many times require rumen or duodenal cannulas that are surgically placed in the cows during their dry period. Once fitted with a cannula, a cow is expected to remain on the dairy farm for a long period of time, regardless of her SCC, even if the farm managers might like to cull her.

"With all of the cannulas in the cows, some rumen contents may leak on the bedding," Bruce says. "It's kind of amazing we're able to achieve high quality milk. Once we go to the trouble to do surgery on an animal, we'll try to work with

her longer. We wouldn't keep others around as long."

There can be several nutritional studies going on at one time, and it's the dairy farm staff that's responsible for feeding the correct cows the correct mix of rations for each study, which is where the tie-stall set up comes in handy. The researchers sample blood, manure and digestive contents of the cows in each study.

"Most University herds are used to carrying out research projects and trials that actually can make it more difficult to maintain this level of milk quality," Tom says. "MSU is no exception and one of these trials probably kept MSU from receiving this award sooner. Many cows in these trials have to remain in the herd, even if they might be cull candidates on another farm."

Award Winning Quality

"We are striving to do the best we can," Bob says of the farm's high quality milk and of achieving the top MMPA award. "We were really surprised and proud when we learned that we received the award. It's quite an honor."

The MSU Dairy Farm team credits their accomplishments in milk quality to many little changes that resulted in making a big difference in the herd's overall SCC.

"As we thought of new ideas, we tried them out," Bob says. "They're all working together well now."

Other members of the team give Bob high marks for being an easy to work with open minded coach, saying he's always open to trying out new ideas, not turning the ideas away for the sake of keeping up the status quo.

"You have to be open minded and willing to try to do things that have the potential to work better for you," Bob says.