



PROGRESSIVE DAIRY

59 Bells Udder
Farm conquers
Klebsiella mastitis



ON THE COVER



Photo provided by Angela Rowson.

Nicole Bradley, herd manager of Bells Udder Farm.

Bells Udder Farm conquers *Klebsiella* mastitis

Angela Rowson for *Progressive Dairy*

AT A GLANCE

By the end of 2019, Bells Udder Farm, a 550-cow dairy located near Camp Douglas, Wisconsin, had had enough. Enough of *Klebsiella* mastitis, that is.

Bells Udder Farm, owned by Tim and Karyn Bell and James and Marcy Bell, has a herd that averages 102 pounds of milk per cow per day with 3X milking and has a bulk tank somatic cell count (SCC) of 70,000. They had been dealing with clinical mastitis caused by *Klebsiella* for several years. With

each year that passed, the number of cases gradually increased until they peaked in 2019. “It was definitely our number one concern on the dairy,” Nicole Bradley, herd manager of the farm since 2014, says. “It was very obvious that what we were doing wasn’t working. We knew we needed to make some serious changes in order to get control of this issue.”

Klebsiella is a gram-negative bacteria and a common cause of clinical mastitis on dairy farms. Mastitis caused by *Klebsiella* can be severe, resulting in abnormal milk; a swollen, hard, painful quarter; and a sick cow that sometimes dies. If cows with *Klebsiella* mastitis survive the illness, they are often culled due to low milk production.

A 2019 study performed by Iowa State University showed that only 43% of cows stayed in the herd after recovering from *Klebsiella* mastitis. The remaining 57% of cows either died or were culled.

The majority of *Klebsiella* mastitis cases occur in the summer. This is because the bacteria flourishes in warm, humid weather. Also, cows’ immune defenses may be lower at this time due to heat stress, which results in a more susceptible animal.

Cows shed *Klebsiella* intermittently in their feces. Research in 2006 showed that 81% of fecal samples collected from healthy cows contained *Klebsiella*. Fecal shedding

Continued on back

Bells Udder Farm conquers Klebsiella mastitis, continued from front

of Klebsiella results in contamination of the environment, including freestall bedding, holding pens and walkways.

Together, the team of Bradley, the Bells, their herd veterinarian and nutritionist developed a plan of attack to finally conquer Klebsiella mastitis. The foundation of their plan was to prevent contact of teats with materials that contain cow feces.

The team first examined the freestalls. It was clear that manure contamination of the bedding was occurring due to improper cow positioning. When lying, cows would defecate and, instead of going into the alleyway, it landed in the stall bed. This was most evident in the first-lactation pens. “We measured the freestalls our 2-year-olds were using and ended up having to completely reset all of them,” Bradley says.

Due to labor challenges, stalls were rebedded with clean sand only once every 10 days. This combined with cows defecating in the stalls led to large numbers of Klebsiella in the bedding. Now, the backs of stalls are scraped at each milking, sand is groomed once per day, and stalls are filled with new sand every five days. In 2020, the dairy invested in a new sand shooter which fills the stalls twice as fast as before. Bradley states, “This purchase has made a huge difference on how we manage labor on the farm.”

The team also focused their efforts in the parlor. They observed too many cows with dry, cracked, dirty teats with hyperkeratosis. Bradley and the herd’s advisory specialist, with their milking equipment dealer, worked closely with milkers to ensure adherence to the pre-milking teat disinfection protocol and that proper milk letdown was occurring. They reduced water use and added a drop hose that contains iodine for flushing units between cows and cleaning.

Water samples collected from troughs were submitted to University of Minnesota for culture, and the team was concerned with what they found. The results showed Klebsiella was present in drinking water in numbers that were “too numerous to count.” Waterers were only being cleaned once every 10 to 14 days, but now are cleaned twice



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per week in the winter and three times per week in the summer. The dairy also installed a chlorine dioxide water treatment system. Follow-up culture results showed that drinking water is now free of Klebsiella.

In 2018, researchers demonstrated that a Klebsiella pneumoniae vaccine provided significant protection from Klebsiella mastitis as well as a significant increase in milk production and decrease in SCC in vaccinated cows compared to controls (Vaxxon SRP Klebsiella, Vaxxinova). Based on these findings, the team decided to vaccinate cows for Klebsiella. Bradley worked with her veterinarian to determine the appropriate vaccination schedule for their herd. Pregnant heifers were not vaccinated until after their first calving.

With the implementation of these strategies, Bells Udder Farm decreased the number of cows that died or were culled due to Klebsiella mastitis from a peak of 58 in 2019 to 21 in 2020 to only three so far in 2021. Also, the percentage of cows treated and retained within the herd increased from 9% in 2019 to 38% in 2020.

“Before we made these changes, I was afraid to treat cows with Klebsiella mastitis. I didn’t think I could save any of them,” states Bradley. “Now we have far fewer cases, and the handful we do have are much less severe and respond better to treatment. Making these changes is one of the best things we’ve done on the dairy.” 🐄



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PREVENTION IS KEY TO CONTROL

Utilize these approaches to help prevent Klebsiella mastitis in your herd.

1 Keep cows and their udders clean. Research from Cornell University shows that pre-milking teat disinfection reduces bacteria numbers but does not remove all Klebsiella from dirty teats.

2 Decrease bacterial load in bedding. Ensure proper cow positioning within freestalls and refill stalls with clean, dry bedding frequently.

3 Reduce water use in the parlor. “Splash” occurs when workers spray deck manure away as cows are exiting. This splashes manure-contaminated water toward cows with open teat ends.

4 Prevent pools of water and manure build-up. Manure and manure-contaminated water in holding pens and walkways are significant sources of Klebsiella.

5 Consider vaccination. Work with your veterinarian to determine if vaccinating for Klebsiella is right for your herd.