Management Approaches to Reducing or Eliminating Mycoplasma Mastitis in a Dairy Herd–What Has Been Working and Not Working

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Abstract

Mycoplasma spp can cause mastitis, arthritis, pneumonia, and metritis in dairy cattle. Progress in control of *Mycoplasma* spp mastitis, including any management changes made, was evaluated in Utah dairy herds approximately one year after diagnosis on farms that had participated in a mycoplasma prevalence study. Using a questionnaire developed at Utah State University, dairy producers and key management personnel on 10 previously mycoplasma-positive dairy farms in Utah were interviewed. Three farms had evidence that no mycoplasmal cows remained, four had mycoplasma still present, and three were of unknown mycoplasma status. Farms that cultured milk from all clinical mastitis cases for mycoplasma included all of the farms with no further evidence of mycoplasma in cows, and farms with very low prevalence remaining. Of farms that used only bulk-tank monitoring for mycoplasma at the time of the second follow-up survey, all but one were still positive or had unknown status; the only farm using bulk-tank monitoring that was apparently free of mycoplasma had cultured all clinical mastitis cases for several months after diagnosis in the herd, and sold all mycoplasmal cows found. All herds increased lactating cow numbers, and six had decreased bulk-tank milk somatic cell count (SCC). Decreased or eliminated mycoplasma mastitis was associated with approximately 1% less of the herd per month contracting clinical mastitis, and even further reduced treatment for mastitis. Mycoplasma mastitis persisting in dairy herds was associated with observing clinical mastitis moving from one quarter to another, adult cows with droopy ears and nonresponsive respiratory disease in calves.

Résumé

Différentes espèces de mycoplasmes peuvent occasionner la mammite, l'arthrite, la pneumonie et la métrite chez les bovins laitiers. Dans plusieurs fermes laitières de l'Utah avec un diagnostic positif dans le cadre d'une étude sur la prévalence de mycoplasmes, on a évalué, près d'un an plus tard, les progrès réalisés dans la lutte contre la mammite à mycoplasmes et les changements apportés dans la gestion d'élevage. Au moyen d'un questionnaire préparé par l'Université de l'État de l'Utah, dans 10 fermes laitières avérées positives (contaminées par les mycoplasmes), nous avons interrogé les producteurs laitiers et leur personnel de gestion. Dans trois de ces fermes, on a pu retrouver des vaches infectées par les mycoplasmes, dans quatre autres fermes on observait encore la présence de mycoplasmes et, dans trois autres fermes, on n'a pu déterminer l'absence ou la présence de cette bactérie. Toutes les fermes ayant éliminé les mycoplasmes et celles chez qui on n'observait plus qu'une très faible prévalence de la bactérie avait mis en culture des échantillons de lait provenant de toutes les vaches souffrant de mammite clinique.

Dans les fermes qui ne vérifiaient la présence du mycoplasme que dans le lait du tank, lors de la seconde enquête de suivi, toutes sauf une étaient toujours positives ou avaient un statut de prévalence inconnue. La seule ferme n'inspectant que le lait du tank qui semblait débarrassée des mycoplasmes avait mis en culture le lait de toutes les vaches atteintes de mammite pendant plusieurs mois après le diagnostic et avait vendu toutes les vaches infectées par les mycoplasmes. Toutes les fermes ont augmenté leur nombre de vaches en lactation et six d'entre elles affichaient une baisse du compte de cellules somatiques (CCS) dans le tank. La baisse ou l'élimination de la mammite à mycoplasmes s'est accompagnée d'une diminution environ 1 % par mois du nombre de vaches contractant la mammite et a même réduit dans une plus grande proportion les traitements contre cette infection. Dans les fermes laitières où persistait la mammite à mycoplasmes, on observait la propagation de la mammite clinique d'un quartier à l'autre du pis, ainsi que des vaches adultes aux oreilles pendantes et des veaux atteints de troubles respiratoires ne réagissant pas au traitement.

Introduction

Mycoplasma spp infections, primarily caused by *M. bovis*, are important in dairy cattle. All ages of cattle are susceptible, and mycoplasma can cause mastitis, metritis, arthritis, pneumonia, septicemia, agalactia, and death of dairy animals.[3,7] Because standard bacterial cultures of milk samples do not isolate *Mycoplasma* spp, special laboratory diagnostic methods are required.[5,6,10]

A previous mycoplasma prevalence study of Utah dairy herds found 16/222 (7%) positive for *Mycoplasma* spp in bulk-tank milk.[11] In that study, 12 farms participated fully in a first follow-up interview and farm visit. One objective of the present study was to evaluate progress in control of *Mycoplasma* spp mastitis in those Utah dairy herds diagnosed approximately one year earlier. Another related objective was to evaluate possible management changes on mycoplasma-positive dairy farms made during the year since diagnosis.

Materials and Methods

The producers whose herds had been diagnosed with mycoplasmal mastitis in the Utah prevalence study[11] were contacted by phone, and offered a second follow-up survey to discuss any changes in their dairy herds as well as questions they might have, and to attempt to learn some new information from them to benefit the dairy industry. The producers had been told approximately one year earlier that the second follow up would be offered. The survey used a questionnaire designed at Utah State University.

Results

Of the 12 farms that participated in the previous survey, 10 farms participated in the second follow-up survey reported here. Surveys were conducted approximately one year after mycoplasma was first detected by the surveillance project.

Mycoplasma bulk-tank monitoring

Producers (n = 10) were asked whether they had done any bulk-tank milk cultures for mycoplasma after their herds were detected positive by the surveillance project. Seven producers (70%) had cultured bulk-tank milk. Mycoplasma bulk-tank testing was still being done monthly on four farms (40%), every two months on one farm (10%), had last been done three months earlier on one farm (10%) and six months earlier on another farm (10%). The other three (30%) had not cultured any bulk-tank milk samples since they were told that mycoplasma was found in bulk-tank milk.

Individual cow milk cultures for mycoplasma

Culture of milk of individual cows for mycoplasma was never utilized on two farms (20%), one of which used bulk-tank milk monitoring; the other eight farms (80%) had cultured milk of individual cows for *Mycoplasma* spp; 6/8 (75%) of those farms had also monitored bulk-tank milk. Three farms (30%) had cultured milk of all lactating cows for mycoplasma approximately one month after mycoplasma was detected by the project. Five other farms (50%) cultured milk from all cases of clinical mastitis (CM). Of the five producers who had cultured CM cases for mycoplasma, four (40% of total farms) also cultured milk from cows after calving, as soon as milk did not appear colostral (fresh cows), and were continuing to culture both fresh and CM cows' milk after approximately one year. One producer additionally cultured milk for mycoplasma from cows with individual SCC > 500,000/ml when tested monthly by DHIA. The farm that only cultured CM cases had stopped "after several months", having sold all positive cows and finding no more.

One farm (10%) had also not tested any individual cows, and reported that they had done no diagnostic follow-up testing of any kind for mycoplasma. The owners had not tested for mycoplasma before the project, and thus did not know that mycoplasma mastitis affected their herd previously.[11] The principal owners' son had suspected mycoplasma mastitis in the herd, and said that he was now able to convince his father to cull chronically mastitic cows sooner.

Most recent results of mycoplasma testing after one year

The current status of mycoplasma diagnostic test results in the herds when resurveyed was evaluated. Herds with ongoing diagnostic testing that found no mycoplasma in milk samples during the previous three months were considered likely to have no more mycoplasma mastitis in the herd. In the four herds (40% of total herds) where milk of individual CM and fresh cows was still being tested, two herds (20%) had no mycoplasma-positive cows (herd sizes were 807 and 1900 lactating cows) during the previous three months. One of those farms also cultured milk from cows with individual SCC > 500,000/ml for mycoplasma. One herd (10%) had one cow (of 5200 lactating cows) positive, and one herd (10%) had "several" (of 1015 lactating cows) positive for mycoplasma during the previous three months. The fifth herd, that cultured CM cases for several months and then stopped, having sold all positive cows, also had no further evidence of mycoplasma based on bulk-tank surveillance, and is described below.

There were five farms (50%) where monthly (four farms) or every two months (one farm) bulk-tank cultures for mycoplasma were still used. During the previous three months, two (20% of total farms) had no mycoplasma detected in bulk milk–the farm that had cultured CM cases for several months and then stopped, and the farm that found "several" of 1015 lactating cows positive on individual testing, both described earlier. One farm (10%) had found one of the three previous monthly bulk tanks positive for *Mycoplasma* spp, and two (20%) did not know the most recent results of bulk-tank testing because they did not monitor it unless their veterinarian told them about the results. Therefore in summary, of farms using only bulk-tank monitoring for

mycoplasma, one had no further evidence of the disease in lactating cows, two were still positive and two had unknown status.

Therefore, in total there were three herds (30%) with no further evidence of mycoplasmal mastitis during the previous three months–one herd had found no positive bulk-tank milk cultures having previously sold all cows individually detected with mycoplasma, and two herds had found no mycoplasma while continuing to culture milk from all CM cases and fresh cows.

Lactating herd sizes

All nine producers who answered regarding how many lactating cows they milked had increased herd size during the previous year since mycoplasma was found. Number of lactating cows in the participating herds is shown in Table 1. All milked > 300 cows; five (56%) milked > 750 cows and three (33%) milked > 1500 cows. The largest herd milked approximately 5200 cows. The three herds with no evidence of continued presence of mycoplasma mastitis all milked more than 750 cows.

Changes in bulk-tank milk SCC

Bulk-tank SCC data (mean for the most recent month) was available from either milk buyer history forms or DHIA (Table 2). Whether SCC had increased, decreased, and whether or not there was continued evidence of presence or absence of mycoplasmal mastitis after one year is also shown in Table 2. The bulk milk SCC had decreased in six herds (60%), including two of the herds with no more evidence of mycoplasma, and increased in three herds (30%), including one with no current mycoplasma found; one herd's SCC remained at 270,000/ml as it had been the year before.[11] The SCC for three (30%) of the herds was between 120,000 and 132,000/ml, all decreased. Eight (80%) of the farms had SCC in bulk milk ≤ 240,000/ml; 6/8 (75%) of those farms had decreased SCC since mycoplasma was detected, including two with no more evidence of mycoplasma and three that still had mycoplasma mastitis diagnosed. The highest herd SCC averaged 303,000/ml, an increase, and there was continued diagnosis of mycoplasma mastitis in the herd.

Milk production

Nine herds provided data to estimate actual milk production per 305 days, monthly records of total milk shipped and total lactating cow numbers, shown in Table 3. Whether milk production had increased, decreased, and whether or not there was evidence of mycoplasmal mastitis after one year is also shown in Table 3. Milk production had increased over the previous year in five herds (56%), including two with continued evidence of mycoplasma and two with mycoplasma no longer detected. Milk production was decreased in four herds (44%), including two with continued evidence of mycoplasma and one with mycoplasma no longer detected. All herds averaged at least 18,500 lb (8399 kg)/cow/305 d, and six (67%) averaged between 20,501 – 24,400 lb (9308 – 11,078 kg)/cow/305 d. The highest producing herd averaged 24,400 lb (11,078 kg), an increase over the previous year, and mycoplasma was no longer detected in the herd (Table 3).

Disposition of mycoplasma-positive cows

Producers (n = 7) who had cultured milk of individual cows and found some positive for mycoplasma were asked whether they had sold all positive cows during the previous year. Five (71%) had sold all mycoplasma-positive cows and two (29%) had not (both had sold most cows found positive). The five herds that sold all positive cows included two with no mycoplasma found during the

Table 1. Dairy herd sizes one year after detection of mycoplasma (number of lactating cows). Three herds no longer had any indication of mycoplasma mastitis in the herd.

Number of lactating cows (range)	Number of herds (n = 9)
301-400 cows	3
401-749 cows	1
750-1100 cows	2[1]
1500-2000 cows	1[1]
>2000 cows	2[1]

[1]One herd in this category no longer had evidence of mycoplasma mastitis.

Table 2. Mycoplasma-positive dairy herds' mean bulk-tank SCC (mean of current month when farm visited). Whether SCC had increased, decreased and whether mycoplasma was still evident or not in herds compared to one year earlier is also indicated.

SCC/ml (range)	Number of herds (n = 10)
120 – 132,000	3 (All decreased[1,2])
180 – 200,000	2 (1 increased, 1 decreased[2])
201 – 240,000	3 (1 increased[1], 2 decreased[1,2])
270,000	1 (unchanged)
303,000	1 (increased[2])

[1]One herd in this category no longer had evidence of mycoplasma mastitis.
[2]One herd in this category had continued evidence of mycoplasma mastitis.

Table 3. Mycoplasma-positive dairy herds' actual milk production (current month when farm visited). Whether milk production had increased, decreased and whether mycoplasma was still evident or not in herds compared to one year earlier is also indicated.

Actual milk/305 days in lb (kg) (range)	Number of herds (n = 9)
18,500 – 20,500 (8399 – 9307)	3 (1 increased[1], 2 decreased[1,2])
20,501 – 24,000 (9308 – 10,896)	3 (1 increased, 2 decreased[2])
24,001 – 24,400 (10,897 – 11,078)	3 (All increased[3])

[1]One herd in this category no longer had evidence of mycoplasma mastitis.
[2]One herd in this category had continued evidence of mycoplasma mastitis.
[3]One herd no longer had evidence of mycoplasma mastitis, two herds had continued evidence of mycoplasma mastitis.

previous three months, two with continued mycoplasma in the herd, and one with unknown current mycoplasma status; the two herds that had not sold all positive cows had continued mycoplasma in the herd.

Milking practices for mycoplasma-positive cows

Four of the seven producers that had found individual cows with mycoplasma (57%) milked all positive cows last, including three whose herds had continued presence of mycoplasma, and one with no mycoplasma found during the previous three months; three (43%) did not milk mycoplasmal cows last, but all three stated that they sold mycoplasma-positive cows "right away". Those three herds included one with continued mycoplasma, one with none found during the previous three months, and one with unknown current mycoplasma status. None of the seven producers milked mycoplasma-positive cows with separate milking units. These practices were similar to those found the year before.[11]

Housing and calving practices for mycoplasma-positive cows

On the five farms that had both detected and kept some mycoplasma-positive cows, two (40%) allowed mycoplasmal cows to calve in the same calving area as all other cows; both farms had continued evidence of mycoplasma in the herd, and three (60%) sold all positive cows, whether pregnant or not when diagnosed, before they could calve again. The latter farms included two with mycoplasma still present and one with no evidence of continued presence of mycoplasma mastitis, the farm that continued to culture milk from all CM cases and fresh cows.

Clinical mastitis and treatment practices

The previous study reported handling of CM in the herds.[11] Approximately one year later, nine (90%) of the producers were milking all CM cases last, and two of them (20% of total) also milked them using separate milking units. The farm (10%) that neither milked CM cases last or with separate units was the farm where no further mycoplasma diagnostic testing had been done.

On the 10 farms, the number of different people treating at least one CM case/month was: one person 10%, two people 50%, three people 20%, four people 20%. Eight farms recorded CM cases/month; the number of CM cases had decreased in three of the eight herds (38%). The decrease in CM cases/month, the lactating herd size, and current mycoplasma status for the three herds were as follows: 39 fewer cases/5200 lactating cows (0.8% of herd/mo)–one mycoplasmal cow found in previous three months; 15 fewer cases/2100 cows (0.7% of herd/mo)–no evidence of mycoplasma; 19 fewer cases/1900 cows (1.0% of herd/mo)–no evidence of mycoplasma.

Four herds (50%) recorded the same rate of CM cases/month, and one herd (12%) detected six more cases/807 cows, 0.7% of herd/month–the final herd with no further evidence of mycoplasma mastitis.

The same eight farms recorded whether CM cases were treated; all eight had been treating all CM cases a year earlier. Five farms (62%) still treated all CM cases, including two with continued mycoplasma and two with no mycoplasma found in the previous three months. Three farms (38%) no longer treated all CM cases; these included the 5200-cow farm with one mycoplasma case found in the previous three months, treating 94 fewer cases of CM (1.8% of herd/month), and the 2100-cow farm with no more mycoplasma detected, treating 20 fewer cases of CM (1.0% of herd/month), as well as the 300-cow herd with no mycoplasma testing during the year, treating six fewer cases of CM (2.0% of herd/month). The latter herd was the one whose owner's son stated that he was now more able to cull chronic mastitis cases.

Clinical mastitis signs in adult cows

In the previous study, 92% of mycoplasma-positive farms had observed non-responsive CM cases, and the same farms had observed CM in two or more quarters of the same cow simultaneously.[11] In the present study, CM that could not be clinically cured had been observed on eight farms (80%) during the previous three months, including all three farms that had no further evidence of mycoplasma during that time. The two farms (20%) reporting no such signs included one herd with continued mycoplasma found and one of unknown status. Clinical mastitis in two or more quarters of the same cow at the same time was now reported by nine (90%) of producers, including all three with no further evidence of mycoplasma.

Clinical mastitis moving from one quarter to another had been observed on 75% of mycoplasma-positive farms a year earlier when mycoplasma was diagnosed.[11] During the previous three months, five producers (50%) continued to report CM moving from quarter to quarter, including three with continued evidence of mycoplasma and one of unknown status. The producer with no further mycoplasma found had observed this in only one cow; she was culture-negative for *Mycoplasma* spp and was sold. The remaining five producers (50%) reported no CM moving between quarters, two with no further mycoplasma found, two of unknown status, and one with continued evidence of mycoplasma.

When the surveillance project had detected mycoplasma, 92% of positive farms reported cows with droopy ears and/or head tilt.[11] During the previous three months, five producers (50%) observed droopy ears in adult cows, including the three with unknown status, and two with continued evidence of mycoplasma. The other five producers (50%) who reported no droopy ears of adult cows included all three with no further mycoplasma found, the herd with one of the last three monthly bulk-tank samples positive for mycoplasma, and one with mycoplasma-positive cows still found. Head tilt in cows was reported on two farms (20%), one of unknown status and one of the herds with no further mycoplasma found.

All 10 producers were asked the open-ended question whether there were any other signs they associated with mycoplasma mastitis. Two responded: "tan flakes in milk" (no further mycoplasma found), and "stress makes more cows mycoplasma-positive" (continued mycoplasma found).

Mycoplasma and calves

Respiratory disease nonresponsive to treatment in calves (birth through weaning age) was reported on 92% of farms with mycoplasma mastitis a year earlier.[11] Producers who raised calves a year later (n = 9) were asked about nonresponsive respiratory disease in calves; four (44%) had observed it during the previous three months, including three with continued mycoplasma in the cows, and one herd of unknown status. The other five (55%) producers had not observed it, including all three with no mycoplasma found during the previous three months, one with continued mycoplasma, and one herd of unknown status.

Changes in milking or treatment practices following diagnosis of mycoplasmal mastitis

Milking and treatment practices in place when mycoplasma was detected by the surveillance project were described previously.[11] Briefly, pre-dip was already used on 92% of mycoplasma-positive farms, and most farms (75%) used either an iodine teat dip or a foam teat dip. Common (used on more than one cow) cloth towels were used on 50% of mycoplasmal farms, common paper towel drying on 8%, and individual cow cloth towel drying on 42%. All farms using cloth towels machine washed the towels, and 91% dried cloth towels in a clothes dryer. All farms post-dipped teats after milking; 92% used an iodine post-dip.[11]

During the present (second follow-up) study, all 10 producers were asked an open-ended question, whether they had changed any mastitis control practices during the previous year. Three (30%) had: 1) isolation of high SCC cows and suspected mycoplasma cows (based on clinical observations only; continued mycoplasma in herd) along with the cows cultured positive for *Staphylococcus aureus* in one pen; 2) just began using cephapirin instead of pirlimycin or ceftiofur as standard CM treatment; 3) instead of common paper towel used to dry teats of several cows, changed to cloth towels, two cows/towel, machine washed but not dried in clothes dryer.

Producers' opinions regarding the most important mycoplasma control measures

Seven (70%) of producers answered the question of what they considered the most important mycoplasma control practices. Three with continued mycoplasma in the herd answered: 1) reduced stress (two producers); 2) milk smaller herds; 3) keep testing the bulk-tank milk for mycoplasma. Two with no further mycoplasma found answered: 1) pasteurize calf milk, segregate calves with respiratory disease, installed ventilation fans in post-weaned calf barns, culture individual cows' milk for mycoplasma, and cull positive cows; 2) keep cows clean, milk high SCC cows last.

Two producers with unknown mycoplasma status answered: 1) get rid of them (had done no diagnostic testing for mycoplasma during the previous year), groom stalls; 2) intended to check every fresh cow for mycoplasma, but haven't.

Dairy cattle breeds milked

There was a variety of dairy breeds milked in the 10 herds – Holsteins (100%), Jerseys (70%), Brown Swiss (40%), Swedish Red (20%), Ayshire (10%), Guernsey (10%), and "Angus crossbreds" (10%). Three farms milked only Holsteins; all seven other farms milked both Holsteins and Jerseys, and some milked one or more other breeds listed above.

Discussion

Most farms decided to culture milk from individual cows for mycoplasma after the bulk-tank surveillance project detected the disease, but none used both culturing milk from CM cases and fresh cows for mycoplasma and culture of the entire lactating herd at one time; all

chose one individual cow testing strategy or the other. In the experience of one of the authors (DW), some producers consider sampling the entire herd at once more convenient, and think of it as the most likely way to get all mycoplasmal mastitis out of their herd simultaneously. Other producers find that after the routine is established, testing milk of all fresh cows and CM cases appears to detect more cases of mycoplasmal mastitis over time. Only one producer elected to do no further mycoplasmal diagnostic testing after the surveillance project detected mycoplasma in their herd; they used the information to increase culling of chronically mastitic cows.

In this study, milk culture from cows with clinical mastitis and soon after calving appeared more effective than either bulk-tank culture monitoring or culturing the entire lactating herd at one time for eliminating mycoplasma. Farms that cultured milk from all CM cases for mycoplasma included all of the farms that had no further evidence of mycoplasma mastitis, and farms with very low prevalence remaining. Of farms that were using only bulk-tank monitoring for mycoplasma at the time of the second survey, all but one were still positive or had unknown status; the only farm using bulk-tank monitoring that found no further mycoplasma had been culturing all CM cases and stopped only after all mycoplasmal cows found were sold and no more were detected.

Whether they had continued evidence of mycoplasma mastitis or not, Utah dairy herds found with mycoplasma in milk a year earlier[11] remained large a year later, and all had increased in herd size. Most milked between 750 and over 5000 cows, with relatively high milk production–most averaged between 20,500 to over 24,000 lb (9,318 to >10,909 kg) per lactation. The SCC in bulk-tank milk was relatively low, with most herds between 120,000 and 240,000/ml, similar to levels when mycoplasma was initially detected.[11] The highest (and increased) bulk milk SCC herd, with SCC just above 300,000/ml, continued to have mycoplasma mastitis, and the highest (and increased) milk production herd, producing greater than 24,000 lb (10,909 kg) per lactation, no longer had mycoplasma detected. However, there was no apparent overall relationship between SCC, milk production, whether those parameters increased or decreased during the past year, and whether or not mycoplasma mastitis continued to be evident in the herds. Financial loss from mycoplasma is mainly caused by death or culling of affected cows.[9,12] Mean milk production may decrease and herd mean bulk milk SCC may increase during outbreaks of disease attributable to infection with *Mycoplasma* spp, but often there is not marked change.[6,10,12] This was observed in the first follow up study[11] as well as the present study. Thus the most effective surveillance for *Mycoplasma* spp utilizes testing of milk samples from individual cows and/or bulk-tank milk over time, rather than monitoring mean milk production or bulk-tank milk SCC.[9,11,12]

Presenting signs of mycoplasma disease in dairy herds often include CM moving from one quarter to another, lameness, and respiratory tract disease in cows or calves.[2,4,5,6,7,10,12] Most farms with continued evidence of mycoplasma mastitis reported nonresponsive respiratory disease in calves. All of the farms with no further evidence of mycoplasma in cows did not report nonresponsive respiratory disease in calves, but all of those farms had reported calf respiratory disease refractory to treatment a year earlier when they were positive for mycoplasma in milk.[11] Nonresponsive respiratory disease is not considered pathognomonic for mycoplasmosis in calves, and mycoplasma in calves is reported to be present on nearly all dairy farms,[8] while mycoplasma in milk of cows is not,[11] so it was unexpected that calf respiratory disease would be associated with mycoplasma in adult cows on the same farm. However, it is interesting that this sign was associated with whether or not mycoplasma continued to be found in lactating cows in this study. Clinical mastitis moving from one quarter to another was reported on all but one farm with continued evidence of mycoplasma. Conversely, all but one farm with no further evidence of mycoplasma mastitis did not observe this, and the other such farm observed it in only one mycoplasma culture-negative cow that was sold. It has already been reported that CM moving from one quarter to another is an important indicator of the likelihood of mycoplasma mastitis,[6,7,10] but also the disappearance of this sign may suggest that mycoplasma intramammary infections are absent or at very low levels (or the only infected cows remaining rarely or never shed mycoplasma in their milk) in a previously positive herd. All herds with no further evidence of mycoplasma mastitis were among the herds no longer reporting droopy ears of adult cows (one herd still mycoplasma-positive also had no reported cows with droopy ears). Most herds that were still mycoplasma-positive and all of the unknown status herds still observed droopy ears in adult cows. These associated clinical signs require further investigation, but could be useful monitoring tools for mycoplasma mastitis over time.

When producers stated what they regarded as the most important mycoplasma control practices, those with continued mycoplasma in the herd answered somewhat generally, such as reduced stress, milking smaller herds and continuing testing. Those with unknown mycoplasma status (they had no current mycoplasma testing program or were unsure of what the results from their veterinarians were) also answered generally, or said things they had not acted on. The most specific answers came from producers that no longer had mycoplasma detected, such as pasteurization of calf milk,

segregating calves with respiratory disease, individual cow testing and culling for mycoplasma, and milking high SCC cows last. Dairy producers with specific plans are probably more likely to make any type of management change, including one for reduction of an infectious disease in their herds.

During the year since mycoplasma was detected in their herds, producers had not improved (or changed much in any way) their milking practices. The majority of herds were still milked with common use towels to clean teats before milking, used on more than one cow at milking time. This practice is associated with more spread of contagious mastitis than using a separate towel for each cow; the majority of dairy herds in the US have adopted separate towels.[1]

Decreased or eliminated mycoplasma mastitis in herds was associated with approximately 1% less of the herd per month contracting CM, and decreased numbers of cases treated for CM as well. The largest herd, with only one mycoplasma-positive cow during recent months, was treating nearly 100 fewer CM cases per month.

Conclusions

Culture of milk from cows soon after calving and those contracting CM, and culling all mycoplasma-positive cows appeared more effective than bulk-tank culture monitoring or culturing the entire herd at one time for eliminating mycoplasma from dairy herds. Farms previously diagnosed with mycoplasma mastitis but presently testing free of it were more likely to no longer observe CM moving from one quarter to another, droopy ears in adult cows, or nonresponsive respiratory disease in calves; most herds reported those signs when mycoplasma mastitis was previously present or if it continued to be found. An important benefit of reducing or eliminating mycoplasma mastitis was associated reduction of clinical mastitis, and even greater reduction in treatment for clinical mastitis in dairy herds.

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