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Milk Quality and Udder Health on Organic Dairies



Report from the
**American Association of Bovine Practitioners
Milk Quality and Udder Health Committee**
for distribution to clients and the general public

“Organic production is a system that is managed in accordance with the Organic Foods Production Act (OFPA) of 1990 and regulations in Title 7, Part 205 of the Code of Federal Regulations to respond to site-specific conditions by integrating cultural, biological and mechanical practices that foster recycling of resources, promote ecological balance, and conserve biodiversity. The National Organic Program (NOP) develops, implements, and administers national production, handling, and labeling standards.”

(National Organic Program, 2002)

The humane and effective care of livestock on organic dairies requires the implementation of a sound preventative health program coupled with diligent observation and monitoring and timely intervention when an animal does become diseased. The use of chemical or artificial products is restricted in the organic system. Growth promotants, synthetic hormones and antibiotics are prohibited. In the United States, once an animal receives any of these banned products they are removed from organic production for life. The welfare of the animal is of primary importance and withholding proper medical treatment to maintain organic status is prohibited. When considering mastitis treatment and control on organic dairy farms, the dilemma is found in the fact that use of commercially available and federally approved antibiotics is prohibited and there are at present no federally approved antibiotics that can be used for treatment and control that meet the requirements of the organic production system. Consequently, developing a mastitis treatment and control program is difficult. The best approach is to control and/or prevent mastitis as much as can be practically achieved. The same precepts utilized by food supply veterinarians in delivery of production medicine programs to their conventional dairy producers also apply in organic production systems.

Guidelines for Milk Quality and Udder Health on Organic Dairies

1) Nutrition

Providing a properly balanced ration with adequate access to feed (e.g. bunk space) and/or adequate grazing acreage and ensuring adequate dry matter intake along with adequate intake of clean water is the core to any preventative health program.

2) Environmental management

Consideration of the use of recycled manure for bedding of lactating dairy cows must take into account the potential for the contamination of the udder by mastitis pathogens. Therefore, methods to reduce bacterial load in recycled manure such as composting are recommended if manure is to be used as bedding on organic dairy farms. Because organic regulations require that animals have access to pasture for at least 120 days per year, pasture management has to be part of the mastitis control plan on organic dairies. The acreage should be adequate for the herd size, managed to decrease parasitic disease and developed to provide an adequate amount of high quality forage. Providing fresh, clean



water in the pasture is also necessary and should be done with thought given to the amount of watering space provided and the distance that cows have to travel to reach a water source. Having too few watering sites may lead to increased cattle traffic in those areas and contamination of the area with excessive manure and urine, leading to a muddy environment supporting a high density of mastitis pathogens. Finally, there should be shade provided, by way of shade trees or roofs, of sufficient coverage so that animal welfare is promoted and the herd is not forced to cool themselves in wet or muddy areas.

3) Biosecurity

Prevention of mastitis starts with minimizing the exposure of susceptible animals to mastitis causing pathogens.

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New herd additions should be considered potentially infected with contagious mastitis pathogens until their milk is cultured negative for these agents. The contagious pathogens include *Streptococcus agalactiae*, *Staphylococcus aureus*, and *Mycoplasma* spp. Considering the epidemiology of the contagious mastitis pathogens, this is difficult to demonstrate with certainty because animals infected with these organisms may shed them intermittently in milk. Finding that all animals from a potential source herd or replacement heifer farm are milk culture-negative for *S. agalactiae* and *Mycoplasma* spp. is much preferred to attempting to pick out only culture-negative animals from within herds that have any animals infected with either of those 2 pathogens. A replacement herd free of *S. aureus* is more difficult to find.

4) Replacements and young stock

In addition to purchased animals, the management of the replacement stock must also be considered. Raising the heifers in a clean, dry environment, free from exposure to stagnant water, mud, and manure and with minimal flies is valid for more than just mastitis control. As the animal approaches parturition, it is critical that they are housed in an environment that is kept clean and dry on a daily basis. Having the animal calve in a contaminated environment is potentially more devastating on organic farms as compared to conventional farms because of the prohibition on the use of antibiotics in the dam or the calf.

5) Proper milking procedures

Because antibiotic treatment is prohibited, minimizing the rate of new mastitis infections at milking time is critically important in organic dairies. Minimizing the exposure of the mammary gland to mastitis pathogens is essential. Because the first barrier to an intramammary infection is the teat sphincter, the health of the teat ends is especially important on organic dairies. Minimizing injuries, viral

infections, or hyperkeratosis of teat ends is essential to help prevent entry of mastitis pathogens. Milkers should wear disposable gloves while they prepare teats for milking and use one disposable towel for each cow to prevent transfer of mastitis causing bacteria between cows. Each cow should be forestripped prior to milking. This evacuates the streak canal and allows for detection of clinical mastitis. The use of a predip is allowed in the organic system. Proper placement of the milking machine on the udder, avoidance of overmilking, and proper application of an approved post-milking teat dip are essential milking practices. Teats should be well covered with teat dip on all sides; this is more likely with cup dipping or foam dipping than with spray dipping. Once again because of the lack of mastitis treatment options, proper teat dipping is especially critical in organic dairy production.

6) Milking system monitoring and maintenance

A regularly scheduled program of milking system monitoring and maintenance should be instituted including an evaluation by a milking system expert using accepted testing equipment and methods. The teat cup liners (inflations) should be changed on a regular basis as per the manufacturer's recommendations. Bacteria counts (e.g. SPC, LPC, PI, and/or coliform counts) should be performed on bulk tank milk samples at least weekly to monitor cow and milking system sanitation.

7) Dry cow management

Dry cow management is especially important on organic dairy farms because there is no option to use dry cow antibiotic therapy, and the dry period is a time of risk for new intramammary infections. Dry cows should be placed on a decreased plane of nutrition just prior to dry-off to decrease milk production and enhance the dry-off process. Nevertheless, the dry cow nutrition program must

provide adequate nutrients to allow for involution and healing of the gland while providing for the needs of the fetus. Vitamin E and selenium levels should be optimized to provide for proper function of the immune system.

After the final milking, use of barrier teat dips and/or teat sealants should be considered if allowed by the organic certifying agency. Dry cows should be housed in a clean, dry environment to minimize bacterial exposure to the teat ends.

8) Managing mastitic cows

Should an animal develop clinical mastitis, steps should be taken to prevent the exposure of the other animals in the herd to potentially contagious mastitis pathogens. The infected cow should be segregated from herd mates and milked last, or milked with a machine dedicated to that cow until the bacterial cause of mastitis can be determined. A milk sample from each quarter exhibiting signs of clinical mastitis should be aseptically collected for microbiological culture to identify the pathogen so appropriate action can be taken. Because antibiotics cannot be used on organic dairies, alternative treatments for mastitis have emerged. None of these alternative approaches have been approved for the treatment of mastitis and scientific evidence of their efficacy is limited, or non-existent. The majority of alternative treatments do not have established withdrawal periods, particularly regarding intramammary treatments. As of this writing, we are not aware of any product specifically approved by the US Food and Drug Administration for treatment of mastitis on organic dairy farms. Use of unapproved products is contrary to Food and Drug Administration guidelines. Additionally, use of non-sterile intramammary treatments is a major risk factor for subsequent infection by pathogens such as mycoplasma, yeast, or *Nocardia* spp. The welfare of the animal is of primary importance and withholding proper

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medical treatment to maintain organic status is prohibited.

A recent study reported on the results of a survey of organic dairies regarding the treatment protocols they used for clinical mastitis. The organic dairy producers reported the use of whey based products, tincture of garlic, *Aloe vera*, vitamin C, aspirin, homeopathy, multivitamin supplements, vegetable oils, corticosteroids, electrolytes, microbial supplements, and vitamin B as agents to treat mastitis in their herds. Further research on the efficacy of these substances for the treatment and/or prevention of mastitis is needed. Meanwhile, organic dairy producers

should consult their veterinarian when developing mastitis treatment protocols. Supportive therapy allowed for treatment of mastitis in organic dairy production includes dextrose, glucose, flunixin meglumine, and oxytocin.

9) Vaccination against mastitis

Effective vaccines are available against some forms of mastitis and vaccine use is allowed on organic dairies. Vaccination against coliform mastitis is an accepted practice with evidence of efficacy. Veterinarians are advised to counsel clients on the potential use of other vaccines that may be of value on a particular dairy.

10) Goal setting and monitoring the mastitis control program

With the implementation of a mastitis control program on the organic dairy, regular monitoring of the program should be scheduled. Herd-specific goals, as developed by the producer in conjunction with the herd veterinarian, should be assessed at least monthly. The program should be tailored to meet the needs and expertise of the individuals involved. It is ineffective and frustrating to implement a program that cannot be followed.

Prepared by Subcommittee [Drs. Wilson (Subcommittee Chair), Terra, Muller, Sears, Anderson] of AABP Milk Quality & Udder Health Committee, during 2010-2011 Committee Cycle.