

Mastitis Control on Organic Dairies in the United States

Fact Sheet

Created: February 2019

Revision due: January 2024

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Preamble

The increasing popularity of organic dairy farms in the United States (U.S.) and worldwide brought about by increased demand for dairy products free of synthetic or manufactured substances, such as antibiotics and feedstuff preservatives like BHT (butylated hydroxytoluene), presents both new challenges and opportunities for those in the dairy industry. Despite a temporary respite in demand for organic products brought by challenging economic times, many observers in the industry see continued growth of this segment. Higher prices for organic dairy products brought about by high demand and a limited supply will continue to make this a popular niche market, especially for smaller farms. This will increase profitability for farms which otherwise have and will continue to face competition against larger, commercial dairies, based on price. The following fact sheet outlines the particular challenges and solutions organic dairy producers have in controlling mastitis.

Definition

Organic dairies in the United States are under the auspices of the U.S. Department of Agriculture (USDA) via its National Organic Program (NOP). This program was established after passage of the Organic Foods Production Act (OFPA) by Congress in 1990. The NOP defines an organic crop or livestock operation and which chemical products that may and may not be used. The definition is that any organic operation must use substances that are naturally derived and are not synthetic. There are exceptions to this definition, such as a few natural chemicals that cannot be used organically while there is also a list of approved, synthetic substances that are acceptable for organic operations, including livestock (dairies). This synthetic list includes vaccines, iodine-based dips, and flunixin (with withdraw times extended twofold). An up-to-date National List of Allowed and Prohibited Substances can be found on the USDA NOP website (<http://www.ams.usda.gov/AMSV1.0/nop>). These standards are monitored and enforced by various USDA-accredited certifying agencies (private or government based) throughout the United States. These agencies act to certify operations as organic and are responsible for monitoring each operation, with yearly inspections, and reviewing the required organic plan update.

Prevention of Mastitis on Organic Dairies

Organic dairying requires an emphasis on management and preventative care in order to be successful. Antibiotics, including those used in dry cow therapy, are not allowed for use in organically produced milk. If an animal gets sick and requires antibiotics, then the animal must

leave organic production for a year after therapy. Accordingly, those aspects of dairy management geared toward mastitis prevention are especially important on organic dairies. The basic recommendations for mastitis prevention are therefore re-emphasized. These recommendations are outlined in National Mastitis Council (NMC) fact sheets on contagious and environmental mastitis, post-milking teat disinfection, and the value and use of somatic cell counts (SCC). Nevertheless, briefly outlined below are some necessary steps in the prevention of new mastitis cases on the dairy farm.

The two basic factors in controlling mastitis or intramammary infections (IMIs) are minimizing the rate of new infections and the duration of infections already present. On organic dairies, the dairy producer is prohibited from using antibiotic dry cow therapy and teat sealants to prevent new infections that commonly occur during the early dry period. Additionally, if antibiotic therapy is used to treat an existing infection, the animal must leave the organic herd for one year. This eliminates the primary means by which dairy farmers can reduce the duration of infections during lactation and the dry period. Organic dairy farmers, therefore, must rely on controlling the rate of new infections through proper milking hygiene, teat dipping, milking machine maintenance, monitoring for signs of mastitis, bedding and housing management, nutrition, vaccination with J-5 *Escherichia coli* bacteriocins if warranted, source of herd replacements, and stress reduction. Additional factors may include proper training and monitoring of employees, and the genetic improvement of animals.

A review of the steps in controlling the rate of new IMIs:

1. Before milking, teats should be forestripped and disinfected with a U.S. Food and Drug Administration (FDA)-approved, sanitizing teat dip. In organic dairies, iodine-based dips are preferred, with chlorhexidine-based dips allowed when iodine-based dips are not deemed effective. After 20 to 30 seconds, the teats are dried with a disposable paper or recently washed and disinfected/dried cloth towel before attachment of liners. Badly soiled teats should be wiped with a towel before stripping. These procedures help in preventing environmental mastitis caused by environmental *Streptococcus* species and coliforms, such as *E. coli*. Proper premilking procedures include wearing gloves, good tactile stimulation, and following stimulation (forestripping or wiping, depending on which comes first in the preparation procedures) the unit should be attached 60-120 seconds later. This will minimize teat end damage from machine stripping and thus reduce the risk of new IMIs.
2. After milking, teats should be dipped with an FDA-approved teat dip. This procedure helps in preventing new IMIs caused by contagious pathogens, such as *Streptococcus agalactiae*, *Staphylococcus aureus*, or *Mycoplasma* species. Barrier teat dips can also be used if environmental conditions warrant protection from invasion by environmental mastitis pathogens into the teat canal between milkings.
3. The maintenance of a clean, dry, comfortable, and stress-free environment for cows between and during milking is important. This includes frequent replacement of used bedding and scraping of alleyways. A proper stall design that allows cows to lie down

and get up comfortably, and the absence of stress factors, such as overcrowding, rough handling by employees, heat, and lack of consistent milking routine, are all important factors.

4. Milking machine maintenance should include proper sizing and calibration of the vacuum system, monitoring teat end vacuum level, proper pulsator ratios, as well as properly functioning pulsators, cluster and liner maintenance, and proper cleaning and sanitization of milking equipment.
5. An effective mastitis control program also requires an understanding of common mastitis pathogens specific to each farm and the incidence of disease. This entails both frequent monitoring of any clinical cases, as well as SCC levels for subclinical IMIs. Monitoring IMIs lets dairy producers know if they are on the right path with their mastitis prevention program or if they need to make changes. Information gathered with bulk tank somatic cell counts (BTSCC) might further be enhanced with individual composite SCC, which can be evaluated with Dairy Herd Improvement (DHI) linear or somatic cell score, or California Mastitis Test (CMT) results. Culturing milk for mastitis pathogens from mammary quarters with an elevated SCC provides an even more complete assessment of a herd's mastitis problem and improves the selection of appropriate therapies. This may include the use of antibiotics or other prohibited substances leading to removal of the animal from the organic herd for at least a year. Some individuals may consider the use of natural "nutraceuticals." However, this practice can be problematic at several levels, including the lack of studies evaluating the efficacy of these treatments, as well as processing steps that may render these nutraceuticals as synthetic compounds that are not accepted by organic guidelines.

These mastitis control guidelines are very important to any dairy farmer who strives to maintain a healthy and therefore profitable herd. However, producers of organic milk are required to meet stringent guidelines with regard to milk production. Those dairy producers who have a good plan for mastitis control and who follow up with careful and consistent execution will be able to gain the rewards inherent to producing organic milk. These rewards are not only monetary but include the satisfaction many may gain when producing a product with the highest of standards for quality and naturalness.

As was mentioned, organic farming and organic dairy farming are growing globally. The greatest growth in consumption of organic dairy products is in Europe, the United States, and Canada. The regulations for organic farming are, for the most part, very similar in these regions. Other countries with large amounts of dairy production, such as China, Latin America, and Australia, produce organic dairy products primarily for export.

Summary

1. In the United States, organic livestock operations are governed by USDA through the NOP.

2. Each organic operation must be certified by a government or private, NOP-approved certifying agency.
3. Organic producers can only use non-synthetic substances on their operations, unless a substance is on the list of approved synthetic substances. A current National List can be found at: <http://www.ams.usda.gov/AMSV1.0/nop>.
4. Since antibiotics are not on the list and therefore not approved for organic livestock operations, the emphasis for mastitis control must be in preventing new infections.
5. This emphasis on prevention requires that organic dairies be extremely well managed through excellent pre- and post-milking hygiene, machine maintenance, nutrition, environment and bedding management, and monitoring of both clinical and subclinical mastitis.