

## A win-win for your dairy

By Ynte Schukken



Starting in this month's *Northeast DairyBusiness*, two organizations present themselves jointly in the QM<sup>2</sup> newsletter. These organizations have a common goal: to provide the best possible management support so dairy farmers can produce milk of the best possible quality. The organizations are Dairy One and Quality Milk Production Services (QMPS), both headquartered in Ithaca, N.Y., but with multiple laboratory locations throughout the Northeast.

Dairy One is an information technology cooperative, providing DHI records services and herd management software throughout the Northeast and Mid-Atlantic regions. An extensive laboratory network provides milk quality testing, as well as comprehensive forage, soil, manure and water testing.

Dairy One's mission is to create and deliver data and information that dairy producers can use to make profit-enhancing decisions.

QMPS is a science-based organization using the most effective methods and technology to help producers improve dairy product quality and safety. Its mission is to meet the needs of producers, veterinarians and the dairy industry through on-farm service, laboratory diagnostics, education and research.

QM<sup>2</sup> aims to bring news and information from these two organizations to the readers of *Northeast*

*DairyBusiness* six times a year.

QM<sup>2</sup> stands for Quality Management – Quality Milk. We in the dairy industry know that Quality Management decisions are an absolute requirement for producing Quality Milk.

The services of Dairy One and QMPS are even more useful when combined: Analysis of dairy records with culture results incorporated is so much more valuable for management decision-making. Producers can use the transportation network of Dairy One to transport samples to our combined laboratory network. We also offer education programs where expertise in software is combined with expertise in animal and herd health.

Combining information from dairy records and software with milk quality and mastitis laboratory information leads to a multiplication of efforts: 10 and 10 is not 20 but more like 100 → QM<sup>2</sup>.

Our third partner in QM<sup>2</sup> is Schering-Plough Animal Health Corp., one of the world's leading manufacturers and marketers of biologicals, pharmaceuticals and specialty products for animals. Schering-Plough has a strong presence in the Northeast dairy community and is proud to support QM<sup>2</sup>.

Throughout the year we will bring you up-to-date information, suggestions and advice on Quality Management that will result in Quality Milk → QM<sup>2</sup>.

## Producers want to know: What about PI counts?

By Gary Bennett, DVM

“Just tell us what we have to do to keep our PI count down, and we'll do it. If we have to milk the cows standing on our head, we'll stand on our head!” That dairy farmer sums up the frustration producers feel dealing with preliminary incubation counts (PIC).

To resolve some frustration, I posed questions producers typically ask me to Steve Murphy with Cornell's Milk Quality Improvement Program and Dave Patteson, manager of the Central Testing Laboratory for Agri-Mark Milk Cooperative. Both have years of experience dealing with bacteria counts.

### 1. What groups of bacteria affect the PIC?

**Murphy:** The PIC selects for bacteria that grow best at cooler temperatures. Gram-negative psychotropic (cold tolerant) rods are more likely to show a significant increase under these conditions, though other environmental contaminants may as well. Other bacteria may show a more moderate increase, perhaps doubling the count in a PIC compared to a standard plate count (SPC).

Bacteria that grow at cool temperatures are often associated with dirty equipment. The prime suspect is a milk cooling system, and possibly dirty cows.

**Patteson:** Cold tolerant, gram-negative bacteria are the most common type affecting the PIC.

## 2. Do mastitis-causing bacteria affect the PIC?

**Murphy:** Most mastitis bacteria aren't capable of significant growth under the conditions of the PIC. There may be exceptions to the rule since many different strains of bacteria cause mastitis.

It's important to compare the PIC to the SPC. If a PIC is used alone, a high count that consists primarily of a mastitic organism may be misinterpreted.

The PIC was designed primarily to detect deficiencies in hygiene, cleaning and sanitation procedures.

**Patteson:** Rarely will mastitis-causing bacteria affect PIC. Udder contents don't tend to affect PIC, but udder surfaces can, especially when predipping is inadequate or nonexistent.

## 3. How can PICs vary so much from day to day?

**Murphy:** The bacteria that multiply at PI temperatures are contaminants. Variability in the PIC on a dairy can result from different levels of contamination and the types of contaminating bacteria, which can change day-to-day.

Different bacteria that may occur with dirty equipment or cows may have different growth rates. Since the PIC relies on growth over time as an indicator of farm practices, the test lends itself to variability.

**Patteson:** Udder prep must be consistent and thorough, regardless of who's milking. Environmental temperatures can also cause day-to-day PIC changes. Cold weather can affect wash temperatures; hot weather can push a system that is cooling marginally over the edge. Here are some other factors that contribute to an elevated PIC:

- The bulk tank. Are the first milking and subsequent milkings being properly cooled? Blind spots in bulk tank cleaning systems can leave milk residues on agitator paddles, the underside of the top of the tank and the valve. Valves may have to be cleaned manually.

- Potable water. Rinsing out sediment in a sanitized bulk tank or chasing milk with water puts this water in the milk. The last thing to touch milking surfaces prior to milking should be sanitized water or an acidified rinse.

- DHI test. It may cause changes in

routine or may add improperly cleaned equipment. Discard milk collected from the meters should not be added to the tank at the end of the milking.

- Partial pick up. It can leave a milk residue on the tank wall above the milk line until additional milk is added.

- Dipping household containers into a bulk tank or filling containers from the valve.

## 4. How can the PIC be lower than the SPC/PLC run on milk when "fresh" or unincubated?

**Murphy:** In many cases, a PIC slightly lower than a fresh SPC would be within the error of the method and essentially indicates no change.

In a study of 855 producer samples done at Cornell University, approximately 8% of the samples had PICs lower than the fresh SPC. Most of these were within the error of the method, though a few dropped as much as 50% or more.

In these instances, it's possible that some bacteria are susceptible to natural inhibitors in the milk that are active at the PI temperature, or some skin bacteria or mastitis organisms die off under these conditions.

**Patteson:** If the cold-loving, gram-negative bacteria are not present or crowded out by other types of bacteria, then the SPC will run higher than the PIC on the same milk.

## 5. Is the PIC an indicator of raw milk's shelf life integrity?

**Murphy:** It's the position of the Cornell Milk Quality Improvement Program that there is no significant association between raw milk PIC and the shelf life of pasteurized fluid milk. The use of the PIC test for this purpose isn't supported by current science.

**Patteson:** With regards to a raw milk supply, it's not a useful test for predicting shelf life. The PIC measures gram-negative bacteria that don't survive pasteurization. If they're found in pasteurized milk, it's a sign of contamination after pasteurization.

Processors' increasing emphasis on the PIC reflects their concern with gram-positive bacteria that survived pasteurization and grew at refrigeration temperatures. The PIC doesn't detect these bacteria.

It's akin to shooting around a target in the hopes of hitting the bull's-eye. ■



## How to reach us...

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QMPS is a program within the Animal Health Diagnostic Center, a partnership between the New York State Department of Agriculture and Markets and the College of Veterinary Medicine at Cornell.

The QMPS staff of veterinarians, technicians and researchers works with New York dairies to improve milk quality by addressing high somatic cell counts, milking equipment and procedures, and milker training in English and Spanish. QMPS also conducts research and teaching programs.

Reach the four regional QMPS laboratories at:

- Central Lab, Ithaca. 607-255-8202.
- Eastern Lab, Cobleskill. 518-255-5681.
- Northern Lab, Canton. 315-379-3930
- Western Lab, Geneseo. 585-243-1780.

QMPS website:  
<http://qmps.vet.cornell.edu>

Dairy One is an information technology cooperative, providing DHI records services and herd management software to dairies throughout the Northeast and Mid-Atlantic region. A comprehensive laboratory network provides milk quality testing as well as forage, soil, manure and water testing.

Contact Dairy One Cooperative Inc. at 730 Warren Rd., Ithaca, N.Y. 14850. Tel: 800-344-2697.

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QM<sup>2</sup> is the newsletter of Dairy One and Quality Milk Production services published with the support of Schering Plough Animal Health. Reach its U.S. customer service at 800-521-5767.

Website: [www.spah.com](http://www.spah.com)

See the next issue of QM<sup>2</sup> in the September issue of *Northeast DairyBusiness*.