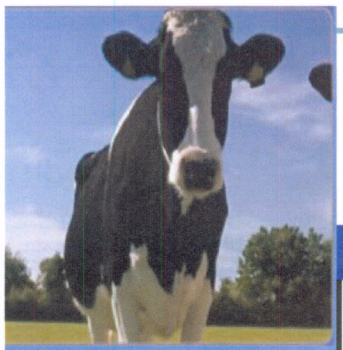


QMI Newsletter

Spring 2011

IN THIS ISSUE:

A Faster, Safer and More Accurate Method of Farm Bulk Tank & Silo Sampling

The 33rd National Conference of Interstate Milk Shippers (NCIMS), recently held in Baltimore, Maryland, has approved the "Requirements for Using an Approved Aseptic Sampler for Farm Bulk Tanks and Silos."

The QMI Aseptic Sampling System consisting of the QMI Composite Sample Collection Bag and peristaltic pump will allow users to obtain more accurate representative producer samples as mandated by the PMO than the currently used conventional dip sampling method.

Tom Angstadt, Director of Technical and Laboratory Services for Dairylea Cooperative supports this innovative method to obtain a true representative sample of the milk being offered for sale by the producer and does so in an aseptic manner.

Barney McConnell, manager of Al-Nye Trucking, states the following:
"Throughout the 9 months of testing with the QMI sampling equipment, we found it to be extremely accurate, helpful and easy to use. To be able to have this equipment on farms, especially the larger ones, would be a great improvement to our current procedures for picking up milk. I see where this process would be a great time saver for us as a hauler and benefit the producer with the accuracy of the samples. I am very glad to hear it's been approved for use and look forward to it being implemented. Thank you for allowing us to participate in a project that will definitely help move our industry forward."

Gib Martin, manager of Mount Joy Cooperative, states the following:
"When using the QMI sampler we found that it was quick and easy to use. Samples were collected while pumping which insures a better reading of all milk in a tank, not just a smaller portion. Mount Joy feels the QMI sampler could give better more accurate results than conventional sampling methods due to the way the sample is collected."

The FDA IMS-a report that finalizes the actions of the 33rd NCIMS Conference which will include the aseptic sampling method, is due to be published later this year.

Peristaltic Pump For Direct Load Or Bulk Tank Sampling

Ice Chest for Milk Sample →

Peristaltic Pump In Protective Container →

← QMI Fitting & Aseptic Sampler

Peristaltic pump and QMI sampler used to obtain sampling data for NCIMS approval

Growth of Dairy Product Spoilage Bacteria In A QMI Composite Sampling Bag vs Syringe

Line sampling (process monitoring) is a critical component in every dairy plant quality control program. Process monitoring samples usually are obtained by one of two methods: either with a syringe or with a sampling bag. These samples are incubated in their sampling container for 7-9 days to conduct the Mosely Keeping Quality Test, and then until the end of code for determining shelf life and quality.

Sources of spoilage organisms are post-pasteurization contamination (PPC) and heat-resistant psychrotrophs (HRP) present in the raw milk. PPC contaminants are usually gram negative bacteria that will not survive the pasteurization process. HRP usually are gram positive spore forming bacteria which are heat activated during the pasteurization process and grow in refrigerated milk.

Finding the sources of these bacteria is critical for improving dairy product quality. This involves obtaining samples that are not contaminated by the sample process. It also involves obtaining large samples and establishing conditions that allow the spoilage bacteria to grow like they would in dairy products. Since contamination rates with spoilage bacteria are quite low, large samples are necessary.

The University of Minnesota conducted studies to determine how *Pseudomonas sp*, a common gram negative PPC, will grow in a QMI Composite Bag versus a syringe. They also conducted a study to determine how *Paenibacillus sp* bacteria , a common HRP, grew in the QMI Composite Bag versus a syringe. These studies are shown in Table 1 and Table 2.

Table 1 below shows that *Pseudomonas sp* was unable to grow in the syringe primarily due to lack of oxygen permeability of the syringe. Growth of *Pseudomonas sp* is quite oxygen dependent. As Table 1 shows, growth in refrigerated milk is quite rapid.

TABLE 1: Growth of *Pseudomonas sp* in QMI Composite Bag vs. Syringe

	Day 7	Day 14	Day 21
Control Bag 2	<1	<1	<1
Bag 1	80	2.2×10^6	6.5×10^7
Bag 2	70	1.0×10^6	10.5×10^7
Bag 3	70	1.7×10^6	6.0×10^7
Control Syringe 1	<1	<1	<1
Syringe 1	<1	3	21.5
Syringe 2	<1	<1	3.5
Syringe 3	1	1	193

Inoculation rate was about 4 bacteria per 10 ml of sterile milk.

Pseudomonas sp

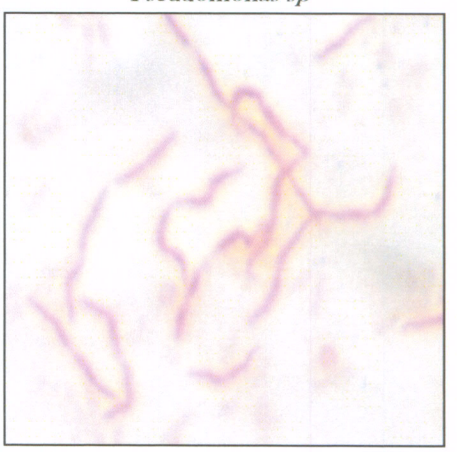
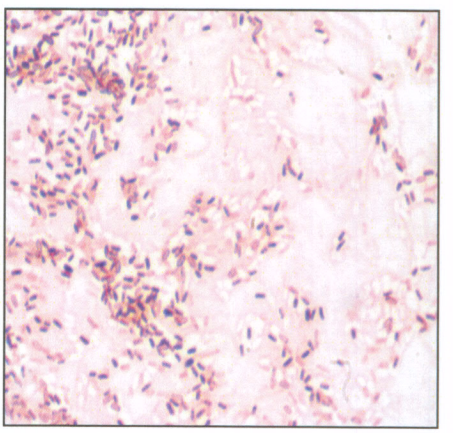


Table 2 below shows that *Paenibacillus sp* was able to grow both in the QMI Composite Bag and in the syringe. These bacteria obviously did not have the oxygen dependency that *Pseudomonas sp* did. This table shows that this gram positive bacteria grew more slowly than the gram negative bacteria.

Growth of *Paenibacillus sp* in QMI Composite Sample Bags vs. Syringe

	Day 7	Day 14	Day 21	Day 28
*Syringe	1.7	6.5×10^{1}	1.1×10^{4}	4.7×10^{4}
Control	<1	<1	<1	<1
*Bag	<1	1.6×10^{2}	7.3×10^{3}	7.3×10^{3}
*Bag2	<1	20×10^{2}	5.9×10^{6}	2.4×10^{7}
*Bag3	<1	8.7×10^{1}	1.2×10^{4}	3.0×10^{4}
Control	<1	<1	<1	<1

Paenibacillus sp



Inoculation rate was about 1 bacteria per 10ml of sterile milk

The real advantage of the QMI Composite Sampling Bag is its volume. Often times contaminants are in milk products at very low populations. For example, Dr. Mansel Griffiths and his associates at the University of Guelph found the population of heat resistant psychrotrophs to be one bacteria cell in 54 mls (about 2 oz) of milk (J. Soc. Dairy Technol. 43: 62-70). In summary, the QMI Composite Sampling Bag has a large advantage versus a syringe for accurate line sampling. In addition, the oxygen permeability of the QMI Composite Sampling Bags facilitates accurate monitoring for Post Pasteurization Contamination with gram negative bacteria.

Chart 1:

Post-Pasteurization Contamination vs Heat Resistant Psychrotrophs

Post-Pasteurization Contamination	Heat Resistant Psychrotrophs
1. Spoilage 10-14 days	1. Spoilage 18+ days
2. Gram Negative Bacteria (e.g. *Pseudomonas sp*)	2. Gram-Positive Bacteria (e.g. *Bacillus*)
3. Stress Test: Growth	3. Stress Test: No Growth
4. Mosely Test: Out of Spec.	4. Mosely Test: Within Specs
5. Line Sample: Gram-Negative	5. Line Sample: Gram-Positive
6. Requires dissolved oxygen for optimal growth	6. Does not require dissolved oxygen for optimal growth

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QMI Aseptic Samplers are manufactured by Biotest Laboratories, Inc., an FDA GMP, ISO 13485: 2005 and ISO/IEC 17025 company. Our Aseptic Samplers are sterilized in compliance to ISO 11135-1: 2007.

QMI Is Authorized To Display the 3-A Symbol On QMI Products (Sanitary Fittings, Number: 63-03; Authorization #: 838)

News and Announcements

QMI Is Exhibiting At The Following Shows in 2011:

IAFP - Milwaukee, WI July 31 - August 3 (Booth # 623)

AABP - St. Louis, MO September 21 - 23 (Booth # 238)

World Dairy Expo - Madison, WI October 4 - 8 (Booth # 133)

Check Out Our New Web Site at www.qmisystems.com
The QMI Training Video is available online at www.youtube.com/qmisystems

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