

Maritime Quality Milk



Annual Report
March 31, 2007

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Executive Summary

At March 31, 2007, Maritime Quality Milk had been in operation for approximately 5 months. In this time frame, six of the seven elements (6 projects plus the Core support) began operation to varying degrees with the seventh element to begin very early in the second year.

Project Highlights:

Below are brief recaps from each of the individual projects. Detailed Project Reports are in Appendix 1.

Project 1: New Intramammary Infections:

Two PhD students have been recruited to work on this project. They are: Dr. Signe Andersen a veterinarian from Denmark and Dr. Chris Calloway, a veterinarian originally from Arkansas who recently completed his DVM and Msc/Residency at the U. of Missouri. Both students started in September. (While Dr. Andersen is initially enrolled in an MSC, her expectation is to switch into a PhD program after the mandatory one-year period in an MSC). Dr. Calloway shares responsibilities between this project and the dry cow treatment model project. Both students are completing the majority of their graduate course work in April 2007. A third student (Dr. Simon Dufour) has been recruited to work on the risk factor portion of the study at the U. of Montreal. This project depends heavily on data to be collected through the CBMRN cohort study. Funds from both the CBMRN and MQM have been combined to support a 2-year contract position for an individual (Dr. Kristen Reyher) who will allocate approximately 50% of her time to being the National Coordinator for the cohort study. Dr. Reyher has done an excellent job of overseeing the start-up of the cohort study, both regionally (herds in PEI, NS and NB) and nationally. The start of the cohort study was delayed from late 2007 to winter 2007 but is now up and running in all regions of the country. For budget reasons, the total size of the cohort study has been reduced from 100 herds to approximately 95 herds.

Project 2: Antimicrobial Resistance:

- A. *To determine antimicrobial use in Canadian dairy herds, data on antimicrobial use will be collected on the 95 randomly selected farms participating in the National Mastitis Cohort using on-farm treatment records and validated by a garbage can audit of empty antimicrobial product containers. All of the supplies, paperwork, and protocols have been finalized and are currently being translated into French. The initiation of the "On Farm" antimicrobial use audit has started in late March 2007 and will run for 1 year.*
- B. *One hundred random isolates of the most important bovine mastitis pathogens will be tested for antimicrobial resistance from samples collected in the National Mastitis Cohort. The minimum inhibitory concentration (MIC) for each isolate will be determined using the Sensititre[®] microdilution system (TREK Diagnostic Systems Inc., Cleveland, OH, USA) and the Sensititre[®] Mastitis CMVIAMAF plate configuration. The laboratory with the Sensititre[®] microdilution system has been established and is functional. The Sensititre[®] Mastitis CMVIAMAF plates and supplies have been received. Since the cohort collection just got started in most provinces, we are just now receiving clinical mastitis samples. We will allow for a couple of months of collections before starting laboratory component of this project but is expected to start by late summer of 2007.*
- C. *Antimicrobial resistant pathogens associated with the treatment of clinical mastitis and treatment at drying off, quarters of cows in the National Mastitis Cohort. A graduate student is scheduled to start this research project in Sept. 2007. Samples for this project are currently being collected and will be stored until this fall.*

Project 3: Mastitis Treatment Decisions

In Canada, mastitis treatment accounts for more than half of all antibiotic use by dairy producers. Appropriate therapy of clinical mastitis remains a contentious issue. The overall hypothesis of this project is that use of rapid tools for the identification of mastitis pathogens will enable therapy decisions that will decrease antibiotic use, without compromising short or long term cow or herd mastitis outcome

Objective 1:

To determine the microbiological tool that will yield the greatest diagnostic information, two tests with potential on-farm use, Triplate (U. of Minnesota USA), and Petrifilm® (3M, London ON), will undergo an initial 6-month in-laboratory testing on submitted clinical mastitis milk samples. The sensitivity, specificity, predictive value of each test, will be determined with standard bacteriological culturing as reference. The testing modality that has superior statistical attributes and has acceptable qualitative operator characteristics will be chosen for on-farm assessment. In September of 2007, Dr. Jennifer McCarron, a DVM graduate of the AVC joined the project as an MSc student. In November of 2007, Dr. McCarron uninitiated both field and laboratory activities. Data collection will be complete in May, 2007. Additionally, Dr. McCarron has completed the majority of the coursework required for her MSC during this time period. Data analysis, including approximately 300 Prince Edward Island samples and 150 from Quebec, will be completed by July, 2007 to allow for a late summer start for objective 2. With additional in-kind support from 3M Canada, the projects objectives have been expanded to include characterization of the tests on cows with unapparent (subclinical) infections as expressed by high somatic cell count.

Objective 2:

To implement a treatment algorithm (using the methodology identified in objective 1) based on pathogen etiology and to determine effects on farm antibiotic use, disease outcome (bacteriological and clinical cure, culling, and relapse), and overall incidence of clinical mastitis the following work will be conducted. New cases of clinical mastitis will be enrolled for 12 months and farms will have a 12-month follow up period. Based on expected pathogen profiles from previous Canadian work and published data on rate of post-treatment cure, approximately 120–150 environmental streptococci cases or 1000 total cases of clinical mastitis are required to determine efficacy of the decision making algorithm. This portion of the project will be launched in the summer of 2007, after the appropriate tools are identified from the initial phase.

Project 4: Dry Cow Treatment:

Maritime dairy herds, participating in the Canadian Bovine Mastitis Research Network will be asked to participate. After completion of the first phase of Clinical Mastitis Treatment Decision Study, herds will begin to enrol cows on the Dry Cow Therapy study. Over a 1 year period the goal will be to enrol 1000 cows. This study will use a variety of available (currently collected) data and generated parameters to develop a predictive model of infection status in dairy cows at dry-off. Data will be collected from the following sources for predictor variables; Historical BTSCC, Target cow production pre dry-off, Target cow composite SCC, History of clinical mastitis, Quarter bacteriology prior to dry off, Composite bacteriology prior to dry off, Quarter SCC prior to dry off and producer-administered composite milk culture. Outcomes will be measured as follows; target cow production post-calving, target cow post-calving composite SCC, fresh-cow quarter bacteriology, Fresh-cow quarter SCC, and post calving clinical mastitis cultures. Data will be statistically analyzed under two frameworks. First multilevel models controlling for province, farm, and cow level factors will be fit using post-calving culture as a gold standard outcome to examine the effect of selective dry cow on new IMI. Additional similar models will evaluate the effects of selective dry cow therapy on milk production and incidence of clinical mastitis. Separate statistical models, using Bayesian methodologies, will define characteristics of target animals which had superior performance under an antibiotic dry cow regime or an OrbeSeal®-based approach. The active data collection on 7 of 8 predictor variables for this project began with the cohort study in February of 2007. The final predictor variable (on farm culture methods) will begin after the test is validated through the companion treatment decisions project. Data on all outcome variables is currently being collected.

Project 5: Johne's Diagnostics:

This project is in the initial stages of starting up. There are no changes anticipated to what was described in the original project description. However, there have been small adjustments to the start times of a couple of components. These small adjustments are explained in the detailed report and are not anticipated to effect completion dates in any manner.

Project 6: Parasite ELISA:

A PhD student (Dr. Raphael Vanderstichel) has been recruited to work on this project and he commenced his graduate program in Jan. 2007. Dr. Vanderstichel was successful in obtaining an NSERC Canada Graduate Scholarship for part of his personal support.

The data collection for this study is closely tied to the CBMRN Cohort Study. Pre-dry samples from the Cohort Study are now being saved for the ELISA project. We have also made arrangements for additional DHI samples to be saved over the summer / fall of 2007 in the Atlantic, Quebec and Ontario regions.

We are in the process of obtaining data about herd pasture usage to enable us to select the appropriate subset of farms for this project. We anticipate recruiting the selected farms in early May, with allocation of calving cows to treatment of placebo groups to start immediately thereafter. We have hired a DVM summer student to help with sample processing this summer. We anticipate reaching our target milestone of 300 cows by mid-fall (ahead of schedule due to the addition of the extra samples from DHI centres)

All of the other project partners have either provided their first year funding (Dairy Farmers of Canada and Merial Inc.) or confirmed the provision of their support (SVANOVA – ELISA test kits).

Core Resource Platform:

The Maritime Quality Milk Core Resource provides administrative, as well as professional and technical support for the research activities of the project. Additionally, it will provide a bridge between the research outputs of the proponents and the commercialization activities. Hiring effective project management and recruiting and hiring high quality professional and technical staff have been the priorities over the first 5 months of operation. Recruiting was conducted nationally/internationally for the backfill for the Director. Dr. Kristen Reyher, a veterinary graduate from Cornell University practicing in the United Kingdom, was recruited for this position. Through an arrangement with the Canadian Bovine Mastitis Network, we were able to create a full FTE position for Dr. Reyher, which aided greatly in her recruitment. We have hired very experienced project management from the local business community, Mr. Art Gennis. MQM is slightly ahead of schedule in hiring technical support. We have hired 3 highly qualified technicians for in-laboratory work; Doris Poole, Shana Richard and Dianne Thompson (start date April 30). Additionally we have contracted 2 additional field technicians (Theresa Andrews – contracted from the AVC Department of Health Management) and Natasha Robinson (casual position). MQM has also accepted a Co-op student (Zoe Little) from the Centre for excellence in agricultural and biological sciences (part of the New Brunswick community college system) with a start date of May 7, 2007. In the summer of 2007, MQM will employ 6 veterinary students as research assistants. Yet to be hired is the Milk Microbiologist position. The target date has been extended for that recruitment until September, 2007.

A Memorandum of Agreement, between AVC, MQM and the Province of PEI was signed to facilitate the sharing of physical and equipment resources. This agreement provides MQM with access to state of the art, high capacity somatic cell counting equipment and additional physical laboratory space. In return, MQM has purchased shared use high volume bacteriology equipment and will support the provinces laboratory renovations and expansion.

There has not been any progress made toward commercialization as the project is not ready for that step at this point. There is also no planned or completed transfer to commercial production, transfer outside of Atlantic Canada, sale, lease or other disposal of Special Purpose Equipment.

Maritime Quality Milk certifies to ACOA that the Proponent is maintaining the required environmental protection measures in relation to the project.

MQM looks forward to Year two of the project as all sub-projects will be in full swing.

New MQM Initiatives

1) Core Research Platform (CRP) - Canadian Bovine Mastitis Research Network (CBMRN)

I. Dohoo and G Keefe

The CRP supports and enables the research in two main research themes: Mastitis Monitoring and Mastitis Control. The themes' research integrates with one another through shared material and expertise and will address specific high priority objectives and lay the groundwork for long-term Canadian mastitis research extending beyond the CNMRN.

The CBMRN, a partnership between the Canadian dairy industry and animal health scientists, arose from a keen sense by dairy producers that their investment in mastitis research would bring greater return if the research is planned and performed cooperatively, and combined with purposeful knowledge and technology transfer.

The long-term objectives of the CRP are to enhance and harmonize the national capacity to conduct research on mastitis monitoring and control. The specific objectives are 1) to establish a National Mastitis Cohort of commercial dairy farms, 2) to form a Mastitis Laboratory Network for mastitis research, and 3) establish a Mastitis Pathogen Culture Collection. The CRP, a platform for both fundamental and applied research, unifies the research program. It will be an industry-linked Canadian data collection platform and a durable repository of biological material and data.

To facilitate the data collection of the CRP, the Canadian dairy industry will be stratified into the Maritime Provinces, Quebec, Ontario and the Western Provinces and be coordinated from the Universities of PEI, Montreal, Guelph and Saskatchewan. At UPEI, MQM will be providing the coordination. As well, MQM has been contracted to do microbiology testing for the Maritime provinces, and bulk tank milk analysis and somatic cell counting for the full nationwide cohort..

2) Determination of the relationship between bacterium concentration of *Mycobacterium avium* subsp *paratuberculosis* in bovine feces and time to detection in the TREK ESP diagnostic unit.

S.L. McKenna

3) Implementation of a voluntary Johne's Disease Program for Atlantic Canada

S.L. McKenna

This project is funded by ADAPT (Agriculture Canada), Dairy Farmers of PEI, Dairy Farmers of Nova Scotia, Dairy Farmers of New Brunswick, and Dairy Farmers of Newfoundland. Project funding provides support for on-farm data collection, including producer incentives, and supports the objectives of Project 6.

Appendix 1

Detailed Project Reports

DETERMINE THE SPECIES-SPECIFIC INCIDENCE OF NEW INTRA-MAMMARY INFECTIONS (IMI) IN CANADIAN DAIRY HERDS AND TEST ALTERNATIVE METHODS FOR DETERMINING THIS RATE AS WELL AS RISK FACTORS ASSOCIATED WITH IMI

Executive Summary

Two PhD students have been recruited to work on this project. They are: Dr. Signe Andersen a veterinarian from Denmark and Dr. Chris Calloway, a veterinarian originally from Arkansas who recently completed his DVM and Msc/Residency at the U. of Missouri. Both students started in September. (While Dr. Andersen is initially enrolled in an MSc, her expectation is to switch into a PhD program after the mandatory one-year period in an MSc). Dr. Calloway shares responsibilities between this project and the dry cow treatment model project. Both students are completing the majority of their graduate course work in April 2007. A third student (Dr. Simon Dufour) has been recruited to work on the risk factor portion of the study at the U. of Montreal.

This project depends heavily on data to be collected through the CBMRN cohort study. Funds from both the CBMRN and MQM have been combined to support a 2-year contract position for an individual (Dr. Kristen Reyher) who will allocate approximately 50% of her time to being the National Coordinator for the cohort study. Dr. Reyher has done an excellent job of overseeing the start-up of the cohort study, both regionally (herds in PEI, NS and NB) and nationally.

The start of the cohort study was delayed from late 2007 to winter 2007 but is now up and running in all regions of the country. For budget reasons, the total size of the cohort study has been reduced from 100 herds to approximately 95 herds.

Challenges and Mitigation Strategies

As noted, the main challenges faced by this project relate to the running of the CBMRN cohort study. This challenge was exacerbated by the departure of Dr. Herman Barkema (Atlantic Regional coordinator) in the summer of 2006. Dr. Dohoo took over as Regional Coordinator and Dr. Keefe has taken over all responsibilities for the laboratory activities related to this project. In addition, hiring of Dr. Kristen Reyher as the National Coordinator has greatly facilitated getting the study up and going.

The main challenge faced at present is inadequate laboratory space for processing the collected samples. Temporary arrangements are being put in place for the summer of 2007 and it is expected that the space shortage will be resolved with the opening of the AVC expansion in Sept. / Oct. 2007.

Specific Tasks:

Establish cohort of 80 farms. This has been completed and the actual number is approximately 95 farms. It is anticipated that there may be some loss over the 2 year study period, but we are confident that we will have complete data on well over the 80 farm minimum.

Collect data. Data collection has started. We anticipate being caught up to the original proposed schedule by the end of the summer, 2007.

Develop, test and validate model. Work on this can not start until at least the first 2 rounds of intensive sampling are completed (expected in fall 2007)

Milestones

Establish cohort – completed (as noted above)

Description of incidence and prevalence of IMI – work will start on this in the fall of 2007

Indicators

On-farm data collection – started in late February, 2007. Collection will run until the end of 2008

Manuscript preparation – no activity scheduled until fall of 2007 at the earliest.

DESCRIBE ANTIMICROBIAL USE ON DAIRY FARMS AND DETERMINE THE EFFECT OF MASTITIS TREATMENTS (CLINICAL AND DRY COW) AND CONTROL ON ANTIMICROBIAL RESISTANCE PATTERNS.

Principal Investigator: H. Barkema

1. Executive Summary

- a. *To determine antimicrobial use in Canadian dairy herds, data on antimicrobial use will be collected on the 95 randomly selected farms participating in the National Mastitis Cohort using on-farm treatment records and validated by a garbage can audit of empty antimicrobial product containers. All of the supplies, paperwork, and protocols have been finalized and are currently being translated into French. The initiation of the “On Farm” antimicrobial use audit has started in late March 2007 and will run for 1 year.*

- b. *One hundred random isolates of the most important bovine mastitis pathogens will be tested for antimicrobial resistance from samples collected in the National Mastitis Cohort. The minimum inhibitory concentration (MIC) for each isolate will be determined using the Sensititre[®] microdilution system (TREK Diagnostic Systems Inc., Cleveland, OH, USA) and the Sensititre[®] Mastitis CMVIAMAF plate configuration. The laboratory with the Sensititre[®] microdilution system has been established and is functional. The Sensititre[®] Mastitis CMVIAMAF plates and supplies have been received. Since the cohort collection just got started in most provinces, we are just now receiving clinical mastitis samples. We will allow for a couple of months of collections before starting laboratory component of this project but is expected to start by late summer of 2007.*

- c. *Antimicrobial resistant pathogens associated with the treatment of clinical mastitis and treatment at drying off, quarters of cows in the National Mastitis Cohort. A graduate student is scheduled to start this research project in September 2007. Samples for this project are currently being collected and will be stored until this fall.*

2. Challenges and Mitigation Strategy:

This project will take place under the umbrella of the Canadian Bovine Mastitis Research Network. The main challenge will be coordination of data collection on a range of herds that are geographically dispersed. The CBMRN has put substantial administrative and personnel resources into this effort to insure that the project is completed in an efficient, scientifically effective and timely manner. There was a delay in data collection from every geographical region of CBMRN but now that data collection has started the 3 activities for this project should be fully functional this summer. The graduate student that was working on the first 2 activities has chosen to discontinue his graduate work, but a new graduate student has already been identified and will be starting on this project in May.

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3. *Project Schedule*

Activity Description	Start Date	End Date
Task/Activity Antimicrobial usage in mastitis treatment and control, and antimicrobial resistance H. Barkema PI (with J. McClure)		
Determine antimicrobial usage	April 2007	May 2008
Determine antimicrobial resistance patterns	Aug. 2007	March 2009
Describe effect of treatment on antimicrobial resistance	Sept. 2007	Feb 2011

5. *Milestones*

Project Milestone	Indicator of Achievement	Revised Dates
Antimicrobial usage on dairy farms determined and resistance patterns described	Manuscripts on antimicrobial usage and resistance (Activities 3)	April 2009
Description of the effect of treatment on antimicrobial resistance	Manuscripts on the influence of lactational and dry cow therapy on antimicrobial resistance (Activity 3)	August 2011

VALIDATE ON-FARM MASTITIS PATHOGEN IDENTIFICATION SYSTEMS AND DETERMINE THE UTILITY OF A DECISION MODEL TO TARGET THERAPY OF CLINICAL MASTITIS DURING LACTATION

Principal Investigator: G. Keefe

Executive Summary

In Canada, mastitis treatment accounts for more than half of all antibiotic use by dairy producers. Appropriate therapy of clinical mastitis remains a contentious issue. The overall hypothesis of this project is that use of rapid tools for the identification of mastitis pathogens will enable therapy decisions that will decrease antibiotic use, without compromising short or long term cow or herd mastitis outcome

Objective 1:

To determine the microbiological tool that will yield the greatest diagnostic information, two tests with potential on-farm use, Triplate (U. of Minnesota USA), and Petrifilm® (3M, London ON), will undergo an initial 6-month in-laboratory testing on submitted clinical mastitis milk samples. The sensitivity, specificity, predictive value of each test, will be determined with standard bacteriological culturing as reference. The testing modality that has superior statistical attributes and has acceptable qualitative operator characteristics will be chosen for on-farm assessment. In September of 2007, Dr. Jennifer McCarron, a DVM graduate of the AVC joined the project as an MSc student. In November of 2007, Dr. McCarron uninitiated both field and laboratory activities. Data collection will be complete in May, 2007. Additionally, Dr. McCarron has completed the majority of the coursework required for her MSc during this time period. Data analysis, including approximately 300 Prince Edward Island samples and 150 from Quebec, will be completed by July, 2007 to allow for a late summer start for objective 2. With additional in-kind support from 3M Canada, the projects objectives have been expanded to include characterization of the tests on cows with unapparent (subclinical) infections as expressed by high somatic cell count.

Objective 2:

To implement a treatment algorithm (using the methodology identified in objective 1) based on pathogen etiology and to determine effects on farm antibiotic use, disease outcome (bacteriological and clinical cure, culling, and relapse), and overall incidence of clinical mastitis the following work will be conducted. New cases of clinical mastitis will be enrolled for 12 months and farms will have a 12-month follow up period. Based on expected pathogen profiles from previous Canadian work and published data on rate of post-treatment cure, approximately 120–150 environmental streptococci cases or 1000 total cases of clinical mastitis are required to determine efficacy of the decision making algorithm. This portion of the project will be launched in the summer of 2007, after the appropriate tools are identified from the initial phase.

Challenges and Mitigation Strategy:

This project takes place under the umbrella of the Canadian Bovine Mastitis Research Network. The main challenge will be coordination of data collection on a range of herds that are geographically dispersed. The CBMRN has put substantial administrative and personnel resources into this effort to insure that the project is completed in an efficient, scientifically effective and timely manner. The CBMRN cohort study has been a major logistical challenge. On farm sampling (through the cohort) was originally scheduled to begin in November of 2006 but was delayed until February of 2007. To address this delay, Objective 1 sampling was conducted outside the primary cohort study (beginning in November) and will continue to meet its target dates.

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Specific Tasks associated with this activity:

On-farm mastitis identification systems and targeted therapy of clinical mastitis			
G. Keefe PI			
Select diagnostic tools	Sept. 2006	May 2007	On Schedule
Determine utility of on-farm tools for treatment strategies	May 2007	Apr. 2010	On Schedule

Milestones related to this project:

Project Milestone	Indicator of	Revised Dates	Comment
Establish cohort of 95 herds for CBMRN Core Research Platform	On-farm data collection begins	February 2007	Delay 3 month due to logistical challenges to begin this study on large number of geographically dispersed
On-farm culture methodologies selected	Tool ready to begin clinical mastitis project	May 2007	On target
Evaluation of the utility on-farm tools to direct clinical mastitis	Manuscripts on diagnostic modalities	December 2010	On target

DEVELOP AND VALIDATE A PREDICTIVE MODEL FOR INFECTION STATUS IN DAIRY COWS AT DRY-OFF TO FACILITATE SELECTIVE DRY COW THERAPY DECISIONS

Principal Investigator: G. Keefe

Executive Summary:

Maritime dairy herds, participating in the Canadian Bovine Mastitis Research Network will be asked to participate. After completion of the first phase of Clinical Mastitis Treatment Decision Study, herds will begin to enrol cows on the Dry Cow Therapy study. Over a 1 year period the goal will be to enrol 1000 cows. This study will use a variety of available (currently collected) data and generated parameters to develop a predictive model of infection status in dairy cows at dry-off. Data will be collected from the following sources for predictor variables; Historical BTSCC, Target cow production pre dry-off, Target cow composite SCC, History of clinical mastitis, Quarter bacteriology prior to dry off, Composite bacteriology prior to dry off, Quarter SCC prior to dry off and producer-administered composite milk culture. Outcomes will be measured as follows; target cow production post-calving, target cow post-calving composite SCC, fresh-cow quarter bacteriology, Fresh-cow quarter SCC, and post calving clinical mastitis cultures. Data will be statistically analyzed under two frameworks. First multilevel models controlling for province, farm, and cow level factors will be fit using post-calving culture as a gold standard outcome to examine the effect of selective dry cow on new IMI. Additional similar models will evaluate the effects of selective dry cow therapy on milk production and incidence of clinical mastitis. Separate statistical models, using Bayesian methodologies, will define characteristics of target animals which had superior performance under an antibiotic dry cow regime or an OrbeSeal®-based approach.

The active data collection on 7 of 8 predictor variables for this project began with the cohort study in February of 2007. The final predictor variable (on farm culture methods) will begin after the test is validated through the companion treatment decisions project. Data on all outcome variables is currently being collected.

Challenges and Mitigation Strategies:

This project is not a core Canadian Bovine Mastitis Research Network project but will utilize the resources of the Network (using data collected in the network and network farms). The main challenge will be coordination of data collection on a range of herds that are geographically dispersed. The CBMRN has put substantial administrative and personnel resources into this effort to ensure that the project is completed in an efficient, scientifically effective and timely manner. *The CBMRN cohort study has been a major logistical challenge. On farm sampling (through the cohort) was originally scheduled to begin in November of 2006 but was delayed until February of 2007. This delay does not have a major impact on this project*

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Specific tasks associated with this activity

Models to facilitate selective dry cow therapy decisions in dairy cattle			G. Keefe PI
Select diagnostic tools	Sept. 2006	May 2008	On schedule
Determine utility of DHI and bacteriologic data to choose cows for selective dry cow therapy	May 2007	Apr. 2010	On schedule

Milestones

Project Milestone	Indicator of Achievement	Revised	Comment
Establish cohort of 95 herds for CBMRN Core Research Platform	On-farm data collection begins	February 2007	Delay 3 month due to logistical challenges to begin this study on large number of geographically dispersed herds
On-farm culture methodologies selected	Tools ready to begin dry cow therapy project	May 2008	On target
Evaluation of the utility of DHI and bacteriologic data to choose cows for selective dry cow therapy	Provision of selective dry cow decision support services through AVC/MQM	December 2010	On target

EVALUATE THE USE OF INDIVIDUAL MILK, BULK MILK AND ENVIRONMENTAL SAMPLES IN A VOLUNTARY JOHNE'S DISEASE CONTROL PROGRAM

Principal Investigator: H. Barkema / S. McKenna

Initial Report

Executive Summary

This project is in the initial stages of starting up. There are no changes anticipated to what was described in the original project description. However, there have been small adjustments to the start times of a couple of components. These small adjustments will be explained below and are not anticipated to effect completion dates in any manner.

Challenges and Mitigation Strategies

One of the initial challenges that were identified from the onset of this project was farm recruitment, and that has not changed. As indicated originally, there is strong support from local producers for this project. There have been some challenges with respect to the appearance of equality between multiple provinces. Therefore, there was a minor delay to ensure that producers from all four Atlantic Provinces would have access to participate in the voluntary Johne's program. This has delayed the beginning of enrolling farms, because it was important to avoid giving the impression that we would begin the program in PEI before the other provinces preferentially.

Specific Task Associated with the Activity

At this point, the major task currently being undertaken is to enrol the cohort of 25 herds for the Johne's program. This has begun, and currently 5 herds have been enrolled, with limited on-farm data being collected from these farms. No sample collection has occurred as of yet.

Milestones

The milestone for this stage of the project is to have commenced enrolling the 25 herds and to begin data collection as the indicator of achievement. This phase originally had a start date of January 07 with a completion date of June 07. There has been a delay due to the possible inclusion of herds from neighbouring provinces. The start date was early April 07 and due to the increase size of the pools of farms to include, the anticipated completion date may now be pushed back until Oct 07. However, as stated above, at this time it does not appear that this delay will necessarily impact the completion dates of other milestones in this project significantly.

DETERMINE THE RELATIONSHIP BETWEEN LATE LACTATION (AND BULK TANK) OPTICAL DENSITY RATIOS AND THE RESPONSE OF COWS TO ANTHELMINTIC TREATMENT, THE PRECISION OF THE ELISA TO PREDICT TREATMENT RESPONSE AND THE IMPACT OF PERI-PARTUM ANTHELMINTIC TREATMENT IN CANADIAN DAIRY HERDS

Executive Summary

A PhD student (Dr. Raphael Vanderstichel) has been recruited to work on this project and he commenced his graduate program in Jan. 2007. Dr. Vanderstichel was successful in obtaining an NSERC Canada Graduate Scholarship for part of his personal support.

The data collection for this study is closely tied to the CBMRN Cohort Study. Pre-dry samples from the Cohort Study are now being saved for the ELISA project. We have also made arrangements for additional DHI samples to be saved over the summer / fall of 2007 in the Atlantic, Quebec and Ontario regions.

We are in the process of obtaining data about herd pasture usage to enable us to select the appropriate subset of farms for this project. We anticipate recruiting the selected farms in early May, with allocation of calving cows to treatment of placebo groups to start immediately thereafter. We have hired a DVM summer student to help with sample processing this summer. We anticipate reaching our target milestone of 300 cows by mid-fall (ahead of schedule due to the addition of the extra samples from DHI centres)

All of the other project partners have either provided their first year funding (Dairy Farmers of Canada and Merial Inc.) or confirmed the provision of their support (SVANOVA – ELISA test kits).

Challenges and Mitigation Strategies

As noted, the main challenges faced by this project relate to the running of the CBMRN cohort study. This challenge was exacerbated by the departure of Dr. Herman Barkema (Atlantic Regional coordinator) in the summer of 2006. Dr. Dohoo took over as Regional Coordinator and Dr. Keefe has taken over all responsibilities for the laboratory activities related to this project. In addition, hiring of Dr. Kristen Reyher as the National Coordinator has greatly facilitated getting the study up and going. In addition, establishing an independent mechanism of collecting samples through DGI Centres will enhance our ability to complete this sample collection on (or ahead of) schedule.

The main challenge faced at present is inadequate laboratory space for processing the collected samples. Temporary arrangements are being put in place for the summer of 2007 and it is expected that the space shortage will be resolved with the opening of the AVC expansion in Sept. / Oct. 2007.

Specific Tasks:

Collect data. Data collection has started. We anticipate being caught up to the original proposed schedule by the end of the summer, 2007.

Formulate guidelines. Work on this can not start until the data are collected and analysed. This task is expected to be completed in early 2009.

Milestones

Evaluation of data – to be completed in late 2008 (data collection will finish in fall of 2008)

Formulate guidelines – scheduled for 2009 (as noted above)

Establish parasite diagnostic service through MQM – scheduled for 2009

Indicators

Manuscript preparation – no activity scheduled until fall of 2007 at the earliest

Parasite diagnostic service – scheduled for 2009

MARITIME QUALITY MILK CORE RESOURCE

Executive Summary:

The Maritime Quality Milk Core Resource provides administrative, as well as professional and technical support for the research activities of the project. Additionally, it will provide a bridge between the research outputs of the proponents and the commercialization activities. For this sector, milestones are related to contract management (research and service), human resources management and professional and technical criteria related to MQM research activity.

Hiring effective project management and recruiting and hiring high quality professional and technical staff have been the priorities over the first 5 months of operation. Recruiting was conducted nationally/internationally for the backfill for the Director. Dr. Kristen Reyher, a veterinary graduate from Cornell University practicing in the United Kingdom, was recruited for this position. Through an arrangement with the Canadian Bovine Mastitis Network, we were able to create a full FTE position for Dr. Reyher, which aided greatly in her recruitment. We have hired very experienced project management from the local business community, Mr. Art Gennis. MQM is slightly ahead of schedule in hiring technical support. We have hired 3 highly qualified technicians for in-laboratory work; Doris Poole, Shana Richard and Dianne Thompson (start date April 30). Additionally we have contracted 2 additional field technicians (Theresa Andrews – contracted from the AVC Department of Health Management) and Natasha Robinson (casual position). MQM has also accepted a Co-op student (Zoe Little) from the Centre for excellence in agricultural and biological sciences (part of the New Brunswick community college system) with a start date of May 7, 2007. In the summer of 2007, MQM will employ 6 veterinary students as research assistants. Yet to be hired is the Milk Microbiologist position. The target date has been extended for that recruitment until September, 2007.

A Memorandum of Agreement, between AVC, MQM and the Province of PEI was signed to facilitate the sharing of physical and equipment resources. This agreement provides MQM with access to state of the art, high capacity somatic cell counting equipment and additional physical laboratory space. In return, MQM has purchased shared use high volume bacteriology equipment and will support the provinces laboratory renovations and expansion.

Challenges and Mitigation Strategies:

Staffing was staggered throughout the first year of the project, which will allow more staged recruiting methods. Due to advance publicity regarding the project, MQM was able to recruit some excellent, highly qualified individuals into technical positions. Recruiting for the professional positions has been more challenging; however, in partnership with the CBMRN we were able to put together a package that was sufficient to recruit Dr. Reyher. Active personal recruiting in the milk quality community nationally and internationally has begun for the Milk Microbiologist position. Additionally, advertising will, as a matter of course, take place in the appropriate print and electronic media.

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Specific Tasks Associated with this Activity:

Maritime Quality Milk – Central Resources			
G. Keefe PI			
Recruit MQM personnel	Sept. 2006	Sept 2007	On Schedule

Milestones related to this project:

Project Milestone	Indicator of	Revised Dates	Comment
Hired and trained: a) Project manager b) Backfill for Director c) Technician 1, 2, 3 d) Milk Microbiologist	Project personnel begin work	a) January 2007 b) November 2006 c) 1) September 2006 2) December 2007 3) April 2007 d) September 2007	Technician recruitment ahead of schedule due to heavy workloads and new initiatives (see new initiatives). Delay in recruitment of Milk Microbiologist due to labour market challenges.