

# Johne's Disease Dairy Herd Status

## A. Introduction

The Alberta Johne's Disease Initiative (AJDI) offers voluntary Johne's disease Herd Status (JDHS) for those cattle herds with a low prevalence of animals infected with *Mycobacterium avium* subspecies *paratuberculosis* (MAP). Owners of these herds may wish to advance beyond the control and management of Johne's disease (JD) and demonstrate the low prevalence of MAP in their herds for marketing or other purposes.

Producers wanting to participate in JDHS should arrange with their eligible herd veterinarian, who will in turn notify the Initiative Coordinator (IC). A Johne's Disease Risk Assessment (JDRA) must have been completed for the herd in question and the Johne's Disease Management Plan (JDMP) implemented.

## B. Background

The Canadian Johne's Disease Initiative, led by the Canadian Animal Health Coalition, proposed two pathways for control of (JD), one pathway being JD Herd Status. This pathway requires testing animals for MAP and those animals that test positive must be culled from the herd. Four levels of JD herd risk status were proposed with the level of JD herd status achieved depending on the results of all laboratory tests for JD and/or MAP, the proportion of the animals in the herd tested, and the length of time the herd is enrolled in the program. Herds may remain at any given level of JDHS or may advance to higher levels at a rate that meets the needs of the herd owner.

In the United States, a voluntary JD control program includes JD herd risk status with a recent proposal to increase the number of achievable herd risk levels to six from four.

Alberta Agriculture and Rural Development (ARD) initiated the Alberta Voluntary Johne's Disease Herd Status Program in September 2001. The intent of ARD's program was to: a) categorize participating herds by risk for JD, b) reduce or stop the spread of JD, and c) communicate the level of risk of JD in participating herds to producers purchasing cattle. A small number of dairy and beef producers subsequently took part in this program, but as of May 2010 none had continued to meet the annual requirements for active participation.

## C. Grandfathering Dairy Herds for Alberta's JDHS

Producers who previously participated in a JD control program may apply for "grandfathering" for JDHS. Grandfathering would reward those herds that implemented efforts to control JD and have maintained some degree of herd testing. The AJDI Technical Committee (TC) will assess whether or not the herd in question qualifies for Level 1 or Level 2 status. Grandfathering to Levels 3 or 4 will only be considered in exceptional circumstances. The criteria used by the TC in determining the herd's risk for JD are outlined below. Should circumstances warrant it, the TC may also consider additional factors and information over and above those listed below in determining the herd's risk for JD/MAP.

- Status achieved by the herd during participation in a previous JD control program,
- Amount and type of MAP testing conducted over the past five years, the accreditation or quality control status of the testing laboratory, and the results of all MAP testing,
- Disease history of the herd, including JD, for the past five years,
- History of potential herd exposure to MAP over the past five years,

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- History of adding susceptible species to the herd over the past five years,
- Source(s) of herd additions over the past five years, and
- Herd biosecurity measures presently in place and the approximate year(s) in which they were implemented.

The applying producer may appeal to the AJDI Advisory Committee (AC) the TC's assessment of the herd's JD/MAP risk and the level of JDHS recommended for the herd. The AC decision is final.

### D. Definitions

**AJDI Advisory Committee (AC):** the committee stakeholder representatives responsible for overseeing the AJDI and making changes to the initiative as required. See the committee's terms of reference for further details.

**AJDI Technical Committee (TC):** the committee that oversees the technical and scientific aspects of the AJDI and makes recommendations to the AC. See the committee's terms of reference for further details.

**Approved laboratory:** a laboratory conducting diagnostic/detection tests for JD/MAP and approved by the TC whose results will be accepted for the purposes of the AJDI. Approved laboratories may include the UCVI or other labs successfully completing the annual check tests for detecting *Mycobacterium avium* subspecies *paratuberculosis* (MAP), MAP-specific genetic material, or antibodies produced by cattle exposed to MAP administered by the National Veterinary Services Laboratories (NVSL) of the United States Department of Agriculture for the specific test(s) being offered. The current list of NVSL-approved laboratories is available at [www.aphis.usda.gov/animal\\_health/lab\\_info\\_services/approved\\_labs.shtml](http://www.aphis.usda.gov/animal_health/lab_info_services/approved_labs.shtml).

**Biosecurity:** husbandry and hygienic measures put in place to prevent contact by susceptible animals with a disease agent, MAP in particular for the purposes of the AJDI.

**Commingling:** the direct physical contact between species of animals susceptible to JD/MAP, or the indirect contact of a susceptible animal via feces (manure) or milk from a species of animal susceptible to JD/MAP through use of common transport vehicles, handling facilities, feeding equipment, or pasture. For example, cattle sharing pasture with other species of animals susceptible to MAP are considered to have commingled with those animals. Exposure to manure via contaminated water or feed sources is also considered commingling with the source of the contaminating manure, regardless of the animal's age.

**Eligible cattle:** to be consistent with JD control programs in other jurisdictions in North America, cattle eligible for herd sampling and testing for MAP include all female cattle 36 months of age and older, and all male cattle 24 months of age and older in a given herd.

**Eligible veterinarian:** a veterinarian licensed by the Alberta Veterinary Medical Association to practise veterinary medicine in Alberta, and who has completed the required orientation seminar and any other training activities required under the AJDI. Only eligible veterinarians may participate in the JDHS.

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**Environmental sample:** a manure sample that is collected by or under the supervision of an eligible veterinarian from an area where fecal material from a large proportion of the herd is commingled. Each environmental sample is the final aliquot from four "grabbed" subsamples mixed together thoroughly in a clean container. It will be subjected to culture and PCR for the presence of MAP. Refer to the AJDI guidelines for collecting these samples.

**Herd:** a group of cattle managed as a separate and discrete unit that cannot commingle with other animals susceptible to JD/MAP. A herd may include two or more geographically separated groups of animals under common ownership or management with an interchange or movement of animals without regard to health status.

**Herd animal:** an animal of any species susceptible to JD/MAP that has commingled with animals in the herd in question.

**Herd status level:** the JD herd risk level achieved by a herd through meeting the requirements of the JDHS. There are four levels of herd status with the risk of MAP existing within the herd dropping as the herd moves up in risk status from Level 1 to Level 4.

**Initiative Coordinator (IC):** the person appointed by UCVM to manage the day-to-day operation of the AJDI.

**Johne's disease (JD):** an infectious, communicable and incurable disease, also known as paratuberculosis. It is caused by *Mycobacterium avium* subspecies *paratuberculosis* (MAP) and affects cattle, sheep, goats, and other domestic, exotic and wild ruminants. Clinical signs in cattle are characterized by chronic and progressive diarrhea, weight loss, decreasing milk production, and eventual emaciation and death.

**Johne's Disease Risk Assessment (JDRA):** an in-depth questionnaire completed on-farm by an eligible veterinarian and is used to assess the herd's risk for JD/MAP.

**Johne's Disease Management Plan (JDMP):** a farm-specific plan of action to reduce or minimize the risk JD/MAP poses to the herd. The JDMP is developed jointly by the eligible herd veterinarian and producer after completing a JDRA.

**Level achievement year:** the year in which the herd obtained its current JDHS level. For example, a herd achieving Level 1 JDHS in 2010 would be assigned a JDHS of Level 1-2010. Continued monitoring to maintain this status or move up to a higher status level increases the confidence that the herd is free of MAP.

**Livestock identification (LID):** unique and permanent identification applied to an animal as defined by the Animal Health Act (Alberta) and regulations.

**Official MAP detection test:** a laboratory test to detect MAP that is approved by the TC and is conducted at an approved laboratory. The following are official AJDI MAP detection tests:

- Culture for MAP in fecal samples taken from individual animals.
- Culture for MAP in the appropriate tissue sample(s) taken from an animal suspected of having clinical JD.

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- Use of a polymerase chain reaction (PCR) nucleic acid probe to detect MAP-specific nucleic acids in fecal or tissue samples taken from an individual animal.

**Official MAP screening test:** a laboratory test to diagnose/detect MAP approved by the TC and conducted by a laboratory approved by the TC for use in detecting MAP-suspect animals or herds. The following are official AJDI MAP screening tests.

- ELISA serology to detect MAP-specific antibodies in blood samples taken from individual animals.
- Milk ELISA to detect MAP-specific antibodies in milk samples.
- Culture for MAP of pooled fecal samples containing feces from no more than five individual animals.
- Culture for MAP of environmental samples.

**Polymerase chain reaction (PCR):** a laboratory test to detect MAP-specific nucleic acid(s) in manure, feces, or tissue samples.

**Pooled fecal culture:** mixing, in an approved laboratory, of individual fecal samples from up to a maximum of five animals into a single "pooled sample" to be cultured for MAP. The use of pooled fecal cultures reduces the costs of MAP testing. However, if the pooled fecal culture yields MAP, the individual fecal samples that contributed to the pooled sample must be cultured individually to determine the source of MAP in the pooled culture.

**Positive animal:** an animal that tests positive with an official MAP detection test.

**Premises identification (PID):** the unique premises identification number as defined by the Animal Health Act (Alberta) and regulations for the home farm where the milking herd resides.

**Susceptible species:** all farmed and exotic ruminants which are capable of being infected by natural exposure to MAP. Examples are cattle, bison, sheep, goats, cervids, and camelids.

**Suspect animal:** an animal that tests positive for MAP with an official MAP screening test. Such animals must be sampled for follow up testing with an official MAP detection test to confirm their status as positive or negative.

**Test statistical subset:** the number of eligible animals within a herd that must be tested to meet the requirements for gaining and/or maintaining a given level of JDHS.

### E. General

#### 1. Confidentiality

In order to maintain confidence in the integrity of the JDHS, confidentiality of individual animal and herd test results is a priority. Only the producer may release, or authorize the release, of any information pertaining to an individual animal or herd JD risk. Herd production or MAP test results obtained by the herd veterinarian or designated personnel at UCVm will be kept strictly confidential. However, in order to promote the marketing of cattle from herds with a lower risk for JD/MAP and add value to those cattle in participating herds, it is desirable

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for producers to disclose their participation in JDHS and the level of JDHS they have achieved. It will be the producer's decision as to whether or not to disclose this information.

### 2. Sample Collection and Testing

All serum, fecal and environmental samples must be taken by or under the supervision of an eligible veterinarian. A licensed Animal Health Technologist (AHT) trained by and working under the direct supervision of an eligible veterinarian may also take these samples. Milk samples taken for milk ELISA do not require the supervision of an eligible veterinarian. MAP tests must be conducted by an approved laboratory. The results of all laboratory tests must be provided to the IC within 30 days of their availability.

**Note: A fecal sample must be taken by or under the supervision of an eligible veterinarian prior to an animal that is in the process of being tested with a MAP screening test being culled from the herd (if it dies suddenly, then a fecal or appropriate tissue sample) if culling is to occur before the results of the screening test are known.** The sample(s) will be submitted to an approved laboratory for storage pending the results of the screening test. Should the screening test give a positive result, the stored sample(s) will then be tested with an official MAP detection test to confirm the positive result of the screening test. Failure to sample such an animal for confirmatory testing will result in the positive screening test being interpreted as the animal being positive.

Herd sampling for MAP testing must be done 10 to 14 months after the previous herd sampling. If sampling is delayed after 14 months, the herd may lose its current level of herd status or be removed from JDHS.

### 3. Requirements for JDHS

The herd premises must have a PID number and all animals in the herd must be identified with unique and permanent identification in a manner consistent with the Animal Health Act (Alberta) and regulations. Prior to completing the herd testing required for any level of JD herd status, the producer or herd veterinarian shall notify the IC and must submit a signed statement that states:

- I am fully aware of the management and disease history of the herd and the premises (property) during the past five years.  YES  NO
- Johne's disease or MAP is known or suspected to have existed in the herd within the past five years.  YES  NO
- MAP is known or suspected to have existed on the premises during the past 12 months.  YES  NO

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- Cattle from known MAP-infected herds or herds of unknown MAP status have been introduced into the herd during the past five years.  YES  NO

A JDRA must have recently been completed, the JDMP implemented, and biosecurity measures implemented to prevent exposure of herd animals to direct or indirect exposure to manure or milk from susceptible animals of unknown MAP status. For example, a dairy operation that also contains cattle raised for beef must have measures in place to prevent commingling of the dairy animals with the beef animals **if** the beef herd **is not** to be part of JDHS.

To maintain the current JD herd status level or advance to the next higher level, the producer must have had a new JDRA completed and implemented the resulting JDMP before submitting samples for MAP testing.

### 4. Animals Exhibiting Clinical Johne's disease

All animals over 24 months of age that exhibit clinical signs consistent with JD must be sampled and tested for MAP. If the animal is positive, it must be reported to the IC within 30 days. Animals with clinical JD should be isolated with no direct or indirect contact with other animals and euthanized as soon as possible. Calves born to cows with clinical JD are at a relatively high risk of already being infected with MAP. Such calves should be culled from the herd for beef purposes within 45 days of birth to minimize the risk of spreading MAP to other young stock. The carcasses should be disposed of by rendering or burial in a manner consistent with the Destruction and Disposal of Dead Animals regulation (Alberta) so as not to contaminate the farm environment or put wildlife at risk.

### 5. Culling MAP-Positive Animals

Cattle testing positive by an official MAP detection test but not exhibiting clinical JD should be removed from the herd within 45 days **OR**, subject to the satisfaction of the IC, isolated with no direct or indirect contact with other herd animals until it is removed from the herd. In the event that a MAP-positive cow (not yet clinical) calves before it is removed from the herd, the risk of the resulting calf being born already infected with MAP has been reported at about 10 per cent. Producers may wish to cull such an animal from their herd but this will not be a requirement of JDHS.

Selling positive animals for dairy or breeding purposes is inappropriate and puts additional herds at risk for the disease. Selling positives without notifying the purchaser creates potential liability for the seller.

Producers must provide the IC with a signed statement indicating when and how the MAP-positive animal or carcass was removed from the herd, and the method of its disposition.

### 6. Herd Additions

Purchased animals may be added to the herd provided that they come from a herd with the same or higher level of herd status. If the purchase is from a herd of lower risk status, the herd status of the purchasing herd will drop to that of the source herd. The purchasing herd may

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regain its current classification if all purchased animals from the lower status herd(s) are tested three times with an official MAP detection or screening test at six month intervals, starting before the animal(s) enters the herd. Once all herd additions have tested negative the herd will regain its prior level of herd status and may advance in the classification program by following the appropriate herd testing protocol.

Heifers raised off premises must be raised with adequate biosecurity measures in place to prevent exposure to MAP or to animals of lower or unknown MAP status.

Classified herds may use embryos from any herd provided the embryos were harvested and processed according to the International Embryo Transfer Society protocols. Recipient cows must meet the herd addition requirements.

### **7. Herd Testing and Classification of JDHS**

The results of the initial herd test will determine the actions required to achieve Level 1. This status can be maintained or the producer may attempt to achieve a higher herd risk status by the appropriate sampling and testing done 10 to 14 months after sampling animals to achieve the current level of herd risk. The eventual level of herd status achieved depends upon the herd testing strategies used, the culture results for MAP, culling of positive animals, and the number of years the herd participates in JDHS.

**NOTE: Except in a case of grandfathering, once a herd joins the JDHS program, it will take a minimum of three years for the herd to achieve Level 4 JD herd status.**

Due to the nature of JD and the difficulty in detecting animals subclinically infected with MAP, herds cannot be certified as free of MAP. It is the intent of JDHS to lower the risk of MAP existing in a participating herd as it advances from Level 1 through Level 4.

### **F. Herd Testing Requirements**

The philosophy of Alberta's JDHS is to utilize current science to the greatest degree possible when developing herd testing criteria but still maintain a level of practicality that recognizes the significant costs associated with harvesting samples and testing them for the presence of MAP. In line with this philosophy, in general the testing criteria to achieve a specific level of herd risk are intended to be more stringent than the testing criteria for a herd to maintain that specific risk level. In addition, the intent of the JDHS is to recognize the lowered risk of MAP infected animals in a herd that has advanced in herd risk status and minimize the negative impact on such a herd should MAP suddenly be detected despite the herd meeting all requirements to achieve a specific level of risk status. Such a herd will drop only one level in herd status. Should subsequent annual testing again detect MAP, the herd will drop another level in herd status.

In most herds, cattle to be sampled for testing must be randomly selected from the list of eligible cattle in the herd. At the very least, the numbers of all eligible cattle can be put in a hat and then blindly drawn until the total number of cattle required for sampling is obtained. The herd

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veterinarian can also get assistance from the IC in generating a randomized list of cattle in the herd to sample for MAP testing.

### 1. Level 1 JDHS

#### a) To Achieve Level 1

Producers wanting to achieve Level 1 can select from the testing options outlined in Table 1.

The most economical protocol involves submitting six environment samples for culture and PCR for MAP. If no more than one environment sample is positive Level 1 will be granted **on the condition** that the appropriate number of individual milk, fecal, or serum samples would be submitted for MAP testing within 10 to 14 months in order to either maintain Level 1 status or attempt to move up to Level 2 status. Failure to submit individual animal samples within 10 to 14 months may result in loss of Level 1 and **all** future sampling under the JDHS may require submitting samples from eligible animals for MAP culture. For those herds with two or more positive environmental samples, samples as outlined in the alternatives in Table 1 will be submitted within 30 days for individual fecal culture and PCR.

Except for milk ELISA samples, all other individual animal samples must be taken from **randomly selected** eligible animals. Herds with less than 30 eligible animals for fecal culture and PCR or 60 eligible animals for ELISA testing will sample all eligible animals and make up the total number of sampled animals required with randomly selected two year old cattle, or until all two year old cattle have been sampled.

Any animal that tests positive by milk or serum ELISA or pooled fecal culture is a suspect animal. An individual fecal sample must be submitted from each suspect animal for fecal culture and PCR within 30 days of receiving the positive screening test results. Any positive pooled fecal culture that subsequently yields all negative individual fecal culture and PCR results will be considered one positive individual test result and those animals that contributed to the fecal pool must be sampled again for individual fecal culture at the subsequent herd test 10 to 14 months after the previous herd sampling for achieving Level 1. All animals testing positive with an official test are positive animals.

**A suspect animal may be culled from the herd without confirmatory testing. However, such action may result in culling a non-infected animal because of the potential for false-positive results with MAP screening tests. If the suspect animal is culled without confirmatory testing for MAP, the producer must notify the IC and the animal will be recorded as a positive animal.**

A producer with positive test results on the initial herd screening samples to achieve Level 1 has the opportunity to withdraw from JDHS. The herd test results will be kept confidential and will not be released without the producer's permission. However, producers will be encouraged to continue with JDHS by culling positive animals. If the positive animals are culled, the herd will be awarded Level 1.

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### b) To Maintain Level 1

Samples from the herd must be submitted for testing between 10 and 14 months of the previous herd sampling that achieved Level 1. All animals that contributed feces to a positive pooled fecal culture the previous year that subsequent individual testing failed to identify a positive animal must be sampled for individual fecal culture. All eligible animals added to the herd since the last herd sampling, must be sampled for testing with milk or serum ELISA, or pooled or individual fecal culture and PCR.

The producer has the choice of additional testing from the following herd sampling regimes in order to maintain Level 1:

- i) Six environmental samples for MAP culture and PCR. If one of these samples tests positive, then 30 randomly selected eligible animals must be sampled for fecal culture within 30 days for fecal culture and PCR.
- ii) Submit milk samples for milk ELISA testing from **all** lactating animals in the herd.
- iii) Fecal samples from 30 randomly selected eligible animals for individual or pooled fecal culture. In the event that a pooled fecal culture is positive, the cattle that contributed to that positive pooled culture must be sampled within 30 days for individual fecal culture.
- iv) Submit samples from 60 randomly selected eligible animals for serum ELISA. All animals with a positive result are suspect animals.

Again, a suspect animal must be confirmed as positive or negative by individual fecal culture and PCR within 30 days of the positive screening test results. Any positive pooled fecal culture that subsequently yields all negative individual fecal culture and/or PCR results will be considered one positive individual test result and those animals that contributed to that fecal pool must be sampled for testing at the subsequent herd test 10 to 14 months after the previous herd sampling that resulted in maintaining Level 1. All animals testing positive with an official test will be classified as positive animals.

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Table 1. Summary of Herd Test Strategies/Consequences to Achieve/Maintain Level 1 JDHS

| <b>Achieve Level 1</b><br>(choice of any of these five alternatives)                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Maintain Level 1</b><br>(choice of any of the five alternatives)                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>- Animals testing negative last year subsequent to a positive fecal pool must be sampled for individual fecal culture</li> <li>- All herd additions since the last JDHS test round must be tested using milk or serum ELISA, or individual or pooled fecal culture/PCR</li> </ul>                                                                                                                                                                                         |
| <b>Environmental Samples*</b> – 6 culture/PCR<br><ul style="list-style-type: none"> <li>- If one positive sample, obtain Level 1 with individual animal testing required in 10-14 months</li> <li>- If &gt;1 positive environmental, sample 30 randomly selected cattle for individual fecal culture/PCR. If all are negative or positive animal(s) culled, obtain Level 1</li> </ul>                                                                                                                                   | <b>Environmental Samples*</b> – 6 culture/PCR<br><ul style="list-style-type: none"> <li>- If all negative, maintain Level 1</li> <li>- If any positive, sample 30 randomly selected eligible cattle for individual fecal culture/PCR. If all are negative, or positive animal(s) culled, maintain Level 1</li> </ul>                                                                                                                                                                                             |
| <b>Milk ELISA</b> – all lactating animals<br><ul style="list-style-type: none"> <li>- If all negative, obtain Level 1</li> <li>- All suspect animals are sampled for individual fecal culture and PCR. If fecal samples are negative or positive animals are culled, obtain Level 1</li> </ul>                                                                                                                                                                                                                          | <b>Milk ELISA</b> – all lactating animals<br><ul style="list-style-type: none"> <li>- If all negative, maintain Level 1</li> <li>- All suspect animals are sampled for individual fecal culture and PCR. If fecal samples are negative or positives animals are culled, maintain Level 1</li> </ul>                                                                                                                                                                                                              |
| <b>Serum ELISA</b> – 60 randomly selected eligible cattle<br><ul style="list-style-type: none"> <li>- If all negative, obtain Level 1</li> <li>- All suspect animals are sampled for fecal culture and PCR. If samples are negative, or all positive animals are culled, obtain Level 1</li> </ul>                                                                                                                                                                                                                      | <b>Serum ELISA</b> – 60 randomly selected eligible cattle<br><ul style="list-style-type: none"> <li>- If all negative, maintain Level 1</li> <li>- All suspect animals are sampled for fecal culture and PCR. If samples are negative, or all positive animals are culled, maintain Level 1</li> </ul>                                                                                                                                                                                                           |
| <b>Pooled Fecal Culture</b> – 6 pools of 5 randomly selected eligible cattle each<br><ul style="list-style-type: none"> <li>- If all pooled cultures are negative, obtain Level 1</li> <li>- If a pooled culture is positive, all contributing animals sampled for individual fecal culture/PCR. If positive animals are culled, obtain Level 1. If all samples are negative, obtain Level 1 but the cattle contributing to the positive pool must be retested with individual fecal culture in 10-14 months</li> </ul> | <b>Pooled Fecal Culture</b> – 6 pools of 5 randomly selected eligible cattle each<br><ul style="list-style-type: none"> <li>- If all pooled cultures are negative, maintain Level 1</li> <li>- If pooled culture is positive, all contributing animals sampled for individual fecal culture/PCR. If positive animals are culled, maintain Level 1. If all samples are negative, maintain Level 1 but the cattle contributing to the positive pool must be retested with fecal culture in 10-14 months</li> </ul> |
| <b>Individual Fecal Culture</b> – 30 randomly selected eligible cattle<br><ul style="list-style-type: none"> <li>- If all samples are negative, or all positive animals are culled, obtain Level 1</li> </ul>                                                                                                                                                                                                                                                                                                           | <b>Individual Fecal Culture</b> – 30 randomly selected cattle<br><ul style="list-style-type: none"> <li>- If all samples are negative, or all positive animals are culled, maintain Level 1</li> </ul>                                                                                                                                                                                                                                                                                                           |

## 2. Level 2 JDHS

### a) To Achieve Level 2

A producer wishing to achieve Level 2 must have already achieved Level 1 at least 10 to 14 months ago and not added any animals from a non-JDHS herd since submitting samples to achieve or maintain Level 1 (see protocol for herd additions on page 6). A producer at Level 1 for more than 14 months and wishing to achieve Level 2 must have submitted herd samples for MAP testing required to maintain Level 1. In other words, a producer at Level 1 must decide to maintain Level 1 or attempt to achieve Level 2 within 10 to 14 months after submitting samples to achieve Level 1. Herds not submitting samples within 14 months may lose their herd status. As stated previously, a new JDRA must be completed, the resulting

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JDMP implemented, and copies of both provided to the IC in conjunction with the attempt to maintain Level 1 or attempt to attain Level 2.

Animals that contributed feces last year to a positive pooled fecal culture that subsequent individual animal fecal cultures failed to identify the MAP-positive contributor must be sampled for testing with individual fecal culture and PCR. All eligible animals added to the herd since the last herd sampling must be sampled and tested with serum ELISA, or individual or pooled fecal culture. Additional sampling is required from eligible herd animals by choosing any of the following sampling protocols:

- i) Six environmental samples for MAP culture and PCR. If any of these samples test positive, then 30 randomly selected eligible animals must be sampled within 30 days for individual fecal culture and PCR.
- ii) Submit milk samples from all lactating animals for milk ELISA testing, **plus** all eligible bulls in the herd and all eligible dry cows not sampled for milk ELISA must be tested by serum ELISA or pooled or individual fecal culture and PCR.
- iii) Submit fecal samples from 30 randomly selected eligible animals in the herd for individual or pooled fecal culture. In the event that a pooled fecal culture is positive, the cattle that contributed to that positive pooled culture must have fecal samples submitted within 30 days for individual fecal culture.
- iv) Submit 60 serum samples from randomly selected eligible animals for serum ELISA.

If the herd size is such that 30 eligible animals are not available for fecal culture or 60 animals are not available for serum ELISA, all eligible animals will be tested and the total number of sampled animals required will be made up with randomly selected two year olds, or until all two year olds have been sampled.

A herd may only advance to Level 2 if all environmental and animal culture samples are negative. If positives are culled, the herd will remain at Level 1.

All suspect animals must be sampled within 30 days of receiving the positive screening test results for confirmation by fecal culture and PCR. Any positive pooled fecal culture that subsequently yields all negative individual fecal culture and/or PCR results will be considered one positive individual test result and those animals that contributed to the fecal pool must be sampled again for individual fecal culture and PCR at the subsequent herd test 10 to 14 months after the previous herd sampling that resulted in achieving/maintaining Level 1 JDHS. All animals testing positive with an official test are positive animals.

### **b) To Maintain Level 2**

Samples from the herd must be submitted for testing within 10 to 14 months of submitting samples for achieving Level 2. Animals that contributed feces to a positive pooled fecal culture last year that subsequent individual testing failed to identify the positive contributor must be sampled for testing with individual fecal culture and PCR. All eligible animals added to the herd since the last herd sampling must be sampled and tested with ELISA, pooled fecal or individual fecal culture and PCR.

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Additional sampling is required from eligible herd animals by choosing any of the following herd sampling protocols:

- i) Six environmental samples for MAP culture and PCR. If any of these samples test positive, then 30 randomly selected eligible animals must be sampled within 30 days for individual fecal culture and PCR.
- ii) Submit a single milk sample from all eligible lactating animals for milk ELISA testing, plus all eligible bulls in the herd and all eligible dry cows not sampled for milk ELISA must be tested by serum ELISA or pooled or individual fecal culture and PCR.
- iii) Submit fecal samples from 30 randomly selected eligible animals in the herd for pooled fecal culture. In the event that a pooled fecal culture is positive, the cattle that contributed to that positive pooled culture must have fecal samples submitted within 30 days for individual fecal culture.
- iv) Submit 60 serum samples from randomly selected eligible animals for serum ELISA.

Again, all suspect animals must be confirmed by fecal culture and PCR. If all positive animals are culled, the herd will maintain Level 2 JDHS.

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Table 2. Summary of Herd Test Strategies/Consequences to Achieve/Maintain Level 2 JDHS

| <b>Achieve Level 2</b><br>(choice of any of these five alternatives)                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Maintain Level 2</b><br>(choice of any of these five alternatives)                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>- Animals testing negative last year subsequent to contributing to a positive fecal pool must be sampled for individual fecal culture/PCR</li> <li>- All herd additions since the last JDHS test round must be tested using milk or serum ELISA, or individual or pooled fecal culture/PCR</li> </ul>                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>- Animals testing negative last year subsequent to contributing to a positive fecal pool must be sampled for individual fecal culture/PCR</li> <li>- All herd additions must be tested using milk or serum ELISA, or individual or pooled fecal culture/PCR</li> </ul>                                                                                                                                                                                                             |
| <p><b>Environmental Samples</b> – 6 culture/PCR</p> <ul style="list-style-type: none"> <li>- If all negative, obtain Level 2.</li> <li>- If any positive, sample 30 randomly selected cattle for individual fecal culture/PCR. If all are negative, or cull positive animals, remain at Level 1</li> </ul>                                                                                                                                                                                                                              | <p><b>Environmental Samples</b> – 6 culture/PCR</p> <ul style="list-style-type: none"> <li>- If all negative, maintain Level 2.</li> <li>- If any positive, sample 30 randomly selected cattle for individual fecal culture/PCR. If all are negative, or positive animal(s) culled, maintain Level 2</li> </ul>                                                                                                                                                                                                           |
| <p><b>Milk ELISA</b> – all lactating cattle <b>plus</b> test all eligible bulls and dry cows with serum ELISA, or individual or pooled fecal culture.</p> <ul style="list-style-type: none"> <li>- If all samples are negative, obtain Level 2</li> <li>- All suspect animals are sampled for individual fecal culture/PCR. If all are negative, obtain Level 2</li> </ul>                                                                                                                                                              | <p><b>Milk ELISA</b> – all lactating animals <b>plus</b> test all eligible bulls and dry cows with serum ELISA, or pooled fecal, or fecal culture.</p> <ul style="list-style-type: none"> <li>- If all samples are negative, maintain Level 2</li> <li>- All suspect animals are sampled for individual fecal culture/PCR. If all are negative, or the positive animals culled, maintain Level 2</li> </ul>                                                                                                               |
| <p><b>Serum ELISA</b> – 60 randomly selected eligible cattle</p> <ul style="list-style-type: none"> <li>- If all negative, obtain Level 2</li> <li>- All suspect animals are sampled for individual fecal culture/PCR. If all are negative, obtain Level 2</li> </ul>                                                                                                                                                                                                                                                                   | <p><b>Serum ELISA</b> – 60 randomly selected eligible cattle</p> <ul style="list-style-type: none"> <li>- If all negative, maintain Level 2</li> <li>- All suspect animals are sampled for individual fecal culture/PCR. If all are negative, or positive animals culled, maintain Level 2</li> </ul>                                                                                                                                                                                                                     |
| <p><b>Pooled Fecal Culture</b> – 6 pools of 5 randomly selected eligible cattle each</p> <ul style="list-style-type: none"> <li>- If all pooled cultures are negative, obtain Level 2</li> <li>- If pooled culture is positive, sample all animals contributing to the positive pool for individual fecal culture/PCR. If any samples are positive, remain at Level 1. If all samples are negative, remain at Level 1 but the animals contributing to the positive pool must be retested with fecal culture in 10-14 months.</li> </ul> | <p><b>Pooled Fecal Culture</b> – 6 pools of 5 randomly selected eligible cattle each</p> <ul style="list-style-type: none"> <li>- If all pooled cultures are negative, maintain Level 2</li> <li>- If pooled culture is positive sample all animals contributing to the positive pool for individual fecal culture/PCR. If positive animals culled, maintain Level 2. If all negative, maintain Level 2 but the animals contributing to the positive pool must be retested with fecal culture in 10-14 months.</li> </ul> |
| <p><b>Individual Fecal Culture</b> – 30 randomly selected eligible cattle</p> <ul style="list-style-type: none"> <li>- If all negative, obtain Level 2</li> </ul>                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Individual Fecal Culture</b> – 30 randomly selected eligible cattle</p> <ul style="list-style-type: none"> <li>- If all negative, or positive animals culled, maintain Level 2</li> </ul>                                                                                                                                                                                                                                                                                                                           |

### 3. Level 3 JDHS

#### a) To Achieve Level 3

A producer wishing to achieve Level 3 JDHS must have already achieved Level 2 for 10 to 14 months and not added any animals from a herd with a status of less than Level 2 since submitting samples to achieve Level 2. A new JDRA must be completed, the resulting JDMP implemented, and copies of both provided to the IC.

All eligible animals added to the herd since the last herd sampling must be sampled and tested. Additional sampling is required from eligible herd animals by choosing from the following herd sampling protocols:

## **Johne's Disease Dairy Herd Status**

- i) Six environmental samples for culture and PCR. If any of these samples test positive, then 60 randomly selected eligible animals must be sampled within 30 days for individual fecal culture and PCR, **PLUS**
- ii) Submit milk samples from all eligible lactating animals for milk ELISA testing. All eligible bulls in the herd and all eligible dry cows not sampled for milk ELISA must be tested by serum ELISA, or pooled or individual fecal culture and PCR, **OR**
- iii) Submit 60 fecal samples from randomly selected eligible animals for individual or pooled fecal culture. In the event that a pooled fecal culture is positive, the cattle that contributed to that positive pooled culture must have fecal samples submitted within 30 days for individual fecal culture, **OR**
- iv) Submit 120 serum samples from randomly selected eligible animals for serum ELISA.

Herds with less than 60 eligible cattle for fecal culture and PCR or 120 eligible cattle for ELISA testing will sample all eligible animals and make up the total number of sampled animals required with randomly selected two year old cattle, or until all two year old cattle have been sampled.

Should any of the environmental or fecal samples test positive, the herd will remain at Level 2, provided the positive animals are culled from the herd within 45 days. If the environmental and all fecal samples test negative, the herd will advance to Level 3. Should one of the pooled fecal samples culture positive but subsequent fecal cultures from the individual animals contributing to the positive pooled fecal sample test negative, the herd will remain at Level 2 and all individual animals contributing to the positive pooled fecal culture will be sampled again in 10 to 14 months for individual fecal culture.

Again, all suspect animals must be sampled within 30 days and confirmed negative by fecal culture and PCR.

It is important to reiterate that any animal being tested with a screening test that dies or is culled from the herd before the screening test results are available must have samples taken and submitted to the laboratory to be held for confirmatory testing pending the results of the screening tests. Failure to do so will result in that animal being recorded as a positive should the screening test give a positive result and the herd status will remain at Level 2.

### **b) To Maintain Level 3**

Samples from the herd must be submitted for testing within 10 to 14 months of submitting herd samples to achieve Level 3. All eligible animals added to the herd since the last herd sampling must be sampled and tested in the same manner.

Additional sampling is required from eligible herd animals by choosing from the following herd sampling protocols:

## Johne's Disease Dairy Herd Status

- i) Six environmental samples for MAP culture and PCR. If any of these samples test positive, then 30 randomly selected eligible animals must be sampled within 30 days for individual fecal culture and PCR, **PLUS**
- ii) Submit milk samples from all eligible lactating animals for milk ELISA testing. All eligible bulls and dry cows not sampled for milk ELISA require a serum sample for serum ELISA, or a fecal sample for individual fecal culture and PCR, **OR**
- iii) Submit 30 fecal samples from randomly selected eligible animals for individual or pooled fecal culture and PCR. In the event that a pooled fecal culture is positive, the cattle that contributed to that positive pooled culture must have fecal samples submitted within 30 days for individual fecal culture, **OR**
- iv) Submit 60 serum samples from randomly selected eligible animals for serum ELISA.

For a herd to advance to Level 3, all environment and fecal cultures must be negative. All suspect animals must be confirmed with fecal culture and PCR within 30 days. A herd at Level 3 that yields a positive environment or fecal culture will drop to Level 2.

Table 3. Summary of Herd Test Strategies/ Consequences to Achieve/Maintain Level 3 JDHS

| <b>Achieve Level 3</b>                                                                                                                                                                                                                                                                                                                                                     | <b>Maintain Level 3</b>                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>- Animals testing negative last year subsequent to contributing to a positive fecal pool must be sampled for individual fecal culture/PCR</li> <li>- All herd additions since the last JDHS test round must be tested using milk or serum ELISA, or individual or pooled fecal culture/PCR</li> </ul>                               | <ul style="list-style-type: none"> <li>- Animals testing negative last year subsequent to contributing to a positive fecal pool must be sampled for individual fecal culture/PCR</li> <li>- All herd additions since the last JDHS test round must be tested using milk or serum ELISA, or individual or pooled fecal culture/PCR</li> </ul>                                |
| <p><b>Environmental Samples</b> are mandatory plus one of the four options outlined in the following boxes.</p> <ul style="list-style-type: none"> <li>- 6 environmental culture/PCR</li> <li>- If any are positive, the herd remains at Level 2 and 60 randomly selected eligible cattle are sampled for individual fecal culture/PCR</li> </ul>                          | <p><b>Environmental Samples</b> are mandatory plus one of the four options outlined in the following boxes.</p> <ul style="list-style-type: none"> <li>- 6 environmental culture/PCR</li> <li>- If any are positive, herd drops to Level 2 and 30 randomly selected eligible cattle are sampled for individual fecal culture/PCR</li> </ul>                                 |
| <p><b>Milk ELISA</b> – all lactating cattle plus test all eligible bulls and dry cows with serum ELISA, or pooled or individual fecal culture/PCR</p> <ul style="list-style-type: none"> <li>- All suspect animals must be sampled for individual fecal culture/PCR. If all are negative, obtain Level 3. Any positives result in the herd remaining in Level 2</li> </ul> | <p><b>Milk ELISA</b> – all lactating cattle plus test all eligible bulls and dry cows with serum ELISA, or pooled or individual fecal culture/PCR</p> <ul style="list-style-type: none"> <li>- All suspect animals must be sampled for individual fecal culture/PCR. If all are negative, maintain Level 3. Any positives result in the herd dropping to Level 2</li> </ul> |
| <p><b>Serum ELISA</b> – 120 randomly selected eligible cattle</p> <ul style="list-style-type: none"> <li>- All suspect animals must be sampled for individual fecal culture/PCR. If all are negative, obtain Level 3. Any positives result in the herd remaining at Level 2</li> </ul>                                                                                     | <p><b>Serum ELISA</b> – 60 randomly selected eligible cattle</p> <ul style="list-style-type: none"> <li>- All suspect animals must be sampled for individual fecal culture/PCR. If all are negative, maintain Level 3. Any positives result in the herd dropping to Level 2</li> </ul>                                                                                      |
| <p><b>Pooled Fecal Culture</b> – 12 pools of 5 randomly selected cattle each</p> <ul style="list-style-type: none"> <li>- If pooled culture is positive, herd remains at Level 2 and cattle contributing to the positive pool tested by individual fecal culture/PCR</li> </ul>                                                                                            | <p><b>Pooled Fecal Culture</b> – 6 pools of 5 randomly selected cattle each</p> <ul style="list-style-type: none"> <li>- If pooled culture is positive, the herd drops to Level 2 and cattle contributing to the positive pool tested by individual fecal culture/PCR</li> </ul>                                                                                            |
| <p><b>Individual Fecal Culture</b> – 60 randomly selected eligible cattle</p> <ul style="list-style-type: none"> <li>- If any positive, herd remains at Level 2</li> </ul>                                                                                                                                                                                                 | <p><b>Individual Fecal Culture</b> – 30 randomly selected eligible cattle</p> <ul style="list-style-type: none"> <li>- If any positive, herd drops to Level 2</li> </ul>                                                                                                                                                                                                    |

## **Johne's Disease Dairy Herd Status**

Herds with less than the number of eligible cattle required for fecal culture and PCR or for ELISA testing will sample all eligible cattle and make up the total number of sampled animals required with randomly selected two year old cattle, or until all two year old cattle have been sampled.

### **4. Level 4 JDHS**

#### **a) To Achieve Level 4**

A producer wishing to achieve risk status Level 4 must have already achieved Level 3 for at least 10 months and not more than 14 months of achieving or maintaining Level 3. The herd must not have added any animals from a herd with a status of less than Level 3 since submitting samples to achieve or maintain Level 3. A JDRA must have been recently completed and the resulting JDMP implemented. Copies of both will be provided to the IC.

All eligible animals added to the herd since the last herd sampling must be sampled for testing with individual or pooled fecal culture and PCR. In addition, the producer will choose from the following herd sampling protocols:

- i) Six environmental samples for MAP culture and PCR, **PLUS**
- ii) Sample 60 randomly selected eligible cattle for fecal culture and PCR, **OR**
- iii) Sample 60 randomly selected eligible cattle for pooled fecal culture. In the event that any of the pooled fecal cultures are positive, fecal samples from the animals contributing to the MAP-positive pool must be submitted for individual fecal culture and PCR within 30 days.

Herds with less than the number of eligible cattle required for fecal culture and PCR will sample all eligible cattle and make up the total number of sampled animals required with randomly selected two year old cattle, or until all two year old cattle have been sampled.

Milk or serum ELISA testing is not allowed for achieving or maintaining Level 4 JDHS.

If the environmental and all fecal samples test negative, the herd will advance to Level 4. Should any of the environment or fecal samples test positive, the herd will drop to Level 2, provided that the MAP-positive animals are culled from the herd within 45 days. Should one of the pooled fecal samples culture positive but subsequent fecal cultures from individual cattle contributing to the positive pooled fecal sample test negative, the herd will drop to Level 2 and all animals contributing to the positive pool must be sampled for individual fecal culture at the next herd test in 10-14 months.

#### **b) To Maintain Level 4**

Samples from the herd must be submitted for testing within 10 to 14 months of the date when the samples were last taken to achieve or maintain Level 4. All eligible animals added to the herd since the last herd sampling must be sampled and tested with pooled or fecal culture/PCR. Additional sampling is required from eligible herd animals by choosing from the following herd sampling protocols:

## Johne's Disease Dairy Herd Status

- i) Six environmental samples for MAP culture and PCR, **PLUS**
- ii) Submit 30 fecal samples from randomly selected eligible animals for fecal culture and PCR, **OR**
- iii) Submit 30 fecal samples from randomly selected eligible animals for pooled fecal culture and PCR.

Again, fecal samples must be submitted within 30 days from all suspect animals for confirmatory fecal culture and PCR. If all environmental and fecal samples are negative, the herd will maintain Level 4. If any environmental samples or fecal samples test positive, the herd will drop to Level 3, provided the MAP-positive animals are culled from the herd within 45 days.

Table 4. Summary of Herd Test Strategies/Consequences to Achieve/Maintain Level 4 JDHS

| <b>Achieve Level 4</b>                                                                                                                                                                                                                                                   | <b>Maintain Level 4</b>                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Environmental Samples</b> – 6 culture/PCR, PLUS <b>ONE</b> of the following two options<br>-If an environmental sample cultures positive, the herd drops to Level 2 and 60 randomly selected eligible cattle must be sampled for individual fecal culture/PCR for MAP | <b>Environmental Samples</b> – 6 culture/PCR, PLUS <b>ONE</b> of the following three options<br>- If an environmental sample cultures positive, the herd drops to Level 3 plus 60 randomly selected eligible cattle must be sampled for individual fecal culture/PCR for MAP |
| <b>Pooled Fecal Culture/PCR</b> – 12 x5 randomly selected eligible cattle<br>- If any pooled culture is positive, the herd drops to Level 2 and all contributing animals must be sampled for fecal culture/PCR                                                           | <b>Pooled Fecal Culture</b> – 6 x5 randomly selected eligible cattle<br>- If any pooled culture is positive, the herd drops to Level 3 and all contributing animals must be sampled for fecal culture/PCR                                                                    |
| <b>Fecal Culture</b> – 60 randomly selected eligible cattle<br>- If any animal is positive, the herd drops to Level 2                                                                                                                                                    | <b>Fecal Culture</b> – 30 randomly selected eligible cattle<br>- If any animal is positive, the herd drops to Level 3                                                                                                                                                        |

### I. Adhering to the JDHS Requirements

In order to maintain the integrity of the JDHS, it is expected that all producers and veterinarians will adhere to the spirit of the initiative and honour the requirements of the JDHS. Failure to do so will jeopardize the JDHS and may result in removal of the herd from JDHS.

### J. Appeals

A producer wishing to appeal a decision made by the TC or IC involving his/her herd will provide a written request for reconsideration within 30 days to the AC Chair. The request will detail the specific reason(s) for the appeal and include any relevant information the producer believes may not have been given due consideration. The AC will make a decision regarding the appeal within 60 days. The AC decision will be final.

## Johne's Disease Dairy Herd Status

### Biosecurity Considerations for Participating Herds

Herds participating in JDHS need to remain vigilant regarding various ways of exposing herd cattle to MAP through direct or indirect contact with animals of lesser or unknown MAP status. Examples of indirect contact include the use of common facilities, equipment (e.g. hoof trimming tables), and vehicles (e.g. trucks and trailers). Special efforts are required to minimize the risks associated with indirect contact between herd cattle and manure from animals or herds of a lower level of JDHS or unknown MAP-status. At the very least, equipment and trucks/trailers should be thoroughly cleaned and washed after use by animals of unknown or lower JDHS, especially if the animals moved were over 12 months of age.

Cattle attending livestock or 4H shows may be at risk of being exposed to MAP through contact with other animals of unknown or lower JDHS. Rather than recommending dairy herds participating on JDHS not attend these shows, owners should take precautions to minimize the exposure of their cattle to MAP while enroute to and from a show, as well as during the show. Johne's disease is spread primarily by the fecal-oral route so preventing the exposure of herd cattle to the feces of other animals is essential for preventing the spread of MAP. Cattle less than one year of age are thought to be at much higher risk of being infected with MAP. If taking young animals to a show, pay particular attention to their biosecurity. Some suggestions for biosecurity measures to minimize exposure of cattle to MAP when attending a show are outlined below. The herd veterinarian should also be consulted for additional ideas and suggestions.

- Avoid hauling herd cattle in the same vehicle or trailer with cattle of lower or unknown JD status, or ensure solid partitions between animals.
- Thoroughly clean your truck or trailer after hauling cattle of lower or unknown JD status.
- Minimize direct contact with other animals attending the show.
- Minimize contact with your cattle by other people.
- Prevent contamination of your animal's feed and water with feed or feces from other herds while attending the show.
- Change clothing/coveralls after handling other animals before handling your own animal.
- Wash your foot ware frequently to minimize the risk of tracking manure into your animal's stall.
- Thoroughly clean grooming equipment used on other animals before using on your own animal(s). Minimize the use of common equipment for removing manure/bedding from your animal's stall.
- Wash contaminating manure off the feet and legs of your animal after leaving the show ring before returning it to its stall.