



# Johne's Disease Control Program

*for*  
Dairy & Beef Producers



*Voluntary Bovine  
Johne's Disease Control Program*

*The Uniform Program Standards for the Voluntary Bovine Johne's Disease Control Program provides minimum national standards for the control of Johne's disease.*

*The Program was developed in cooperation with the National Johne's Disease Working Group and the Johne's disease committee of the United States Animal Health Association, State Veterinarians and industry representatives and has been approved by the USDA's Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS). The Program is administered by the State and is supported by industry and the Federal Government.*

*The minimum national standards described in this document do not preclude more stringent methods and rules by any geographical or political subdivision of the United States with regard to activities within its boundaries.*

## Johne's Disease—Why Care?

Johne's disease is estimated to be present in 68 percent of U.S. dairy operations and in eight out of 100 U.S. beef herds.

**Impact on Dairy Industry.** A National Animal Health Monitoring Systems study found that infected dairy herds experience an average loss of \$40 per cow in herds with a low Johne's disease clinical cull rate while dairy herds with a high Johne's disease clinical cull rate lost on average of \$227 per cow. This loss was due to reduced milk production, early culling, and poor body condition at culling. Across the U.S. dairy industry, lost productivity due to Johne's disease is estimated at \$200 million to \$250 million annually.

If Johne's disease is left uncontrolled, the infection rate in a dairy herd will increase over time. The number of animals showing clinical disease does not reflect the total number of infected animals. For every dairy animal showing signs, it is estimated that 10 to 25 others of different ages are also infected. For example, a dairy producer may see one case of clinical disease every few years, then suddenly find 10 percent or more of the herd showing advanced signs of Johne's disease.

**Impact on Beef Industry.** Although most U.S. beef herds are not infected with Johne's disease, it is estimated that eight out of 100 U.S. herds may be infected with this devastating disease. A prevalence study conducted in Georgia found that, while only 4 percent of Georgia beef cattle tested positive for Johne's disease, the cost of Johne's disease to the Georgia beef industry was \$2.449 million to \$4.898 million a year. And while the incidence of Johne's disease among beef herds is significantly less than that of dairy herds, the economic impact on the beef industry can be quite devastating—particularly if Johne's disease is in your beef herd.

## Johne's Disease—What Is It?

Johne's (pronounced "yo-knees") disease is a bacterial infection caused by *Mycobacterium avium* subspecies *paratuberculosis* (MAP) that is contagious, progressive and does not respond to treatment—and robs producers of significant potential income.

First reported in the United States in 1908, MAP is a small rod-shaped bacterium that ordinarily infects calves. Infected animals, however, typically do not show clinical signs until they are three or more years of age.



Infected animals maintain a normal temperature but exhibit weight loss and diarrhea. In the later stages of the infection, animals can become weak and even die.

Some cattle carry "subclinical" *MAP* infections. While these animals don't show signs of diarrhea or weight loss during their normal productive life, they don't perform as well as expected. In the case of dairy animals, subclinical infections can result in lowered fertility or producing less milk than expected. Subclinically infected beef cows may produce calves with unexplained lower weaning weights or be difficult to breed back.

**While the organism known to cause Johne's disease ordinarily infects calves, clinical signs of the disease typically do not show until animals are three or more years of age.**

A few studies related to the treatment of Johne's disease indicate that the disease is probably not curable. Although clinical signs can be reduced by treatment, the cost in livestock is prohibitive, and requires large doses of multiple antibiotics administered for a year or longer.

To minimize the impact of Johne's disease, producers are encouraged to take steps to prevent and control this incurable disease.

Dairy and beef producers purchasing animals from other producers are encouraged to ask about the seller's level of participation and/or his/her herd testing and classification level. The higher the classification level, the less the risk of bringing Johne's disease into the herd.

Beef and dairy herds without testing information or a Classification Level are at the most risk for Johne's disease.



## You Can Help Prevent and Control Johne's Disease by Participating in the Voluntary Bovine Johne's Disease Control Program

Dairy and beef producers wanting to help prevent and control Johne's disease within their herds are encouraged to participate in the *Voluntary Bovine Johne's Disease Control Program*.

The Program has three key components:

- Education
- Management: Best Management Practices
- Herd Testing

“Knowing about Johne's disease and implementing management changes was a life-saving program. Our milk check is bigger, our cows are healthier, and we're in this business for the long haul. We're living proof that a control program is both possible. . .and affordable.”

—Dairy producers Harvey and Jackie Mess  
*Lawn View Farm, Norwalk, Wis.*

You decide your level of involvement in the Voluntary Bovine Johne's Disease Control Program:

- Education component only
- Education and Management components only
- Education, Management and Testing without Herd Classification
- Education, Best Management and Testing to obtain a Herd Classification Level



By participating in this national program you will. . .

1. Improve your understanding of Johne's disease and its impact on your bottom line.
2. Learn and implement Best Management Practices that can help prevent and control Johne's disease in your herd.
3. Learn and implement Best Management Practices that can help prevent and control the spread of Johne's disease to your customers' herds.
4. Have the opportunity to achieve a Classification Level that shows your customers your commitment to helping prevent and control the spread of Johne's disease to their customers' herds.

Each Program component is explained in full within the sections of this document. Each section has been color coded for your convenience:

- *Education component*
- *Management components*
- Testing component
  - *Testing for Non-classification purposes*
  - *Testing for Herd Classification*

“Our reputation is on the line with every bull or female sold to fellow seedstock producers and commercial cow-calf operators so it makes sense to participate in a Johne's disease prevention, control and testing program and know the prevalence—or non-prevalence—of Johne's disease within our herd. I would compare this knowledge and confidence level equal to being a certified brucellosis-free herd or a PI-free herd.”

—Beef seedstock producer Dave Judd  
Judd Ranch, Pomona, Kan.

## EDUCATION COMPONENT

The more you know about Johne's disease, the better you can prevent and/or control the disease. For this reason, all producers who participate in the Voluntary Bovine Johne's Disease Control Program start with the Education Component.

**“The object is to put Johne’s disease out of business—  
not the producer.”**

*—Dr. Michael Collins  
University of Wisconsin-Madison*

During the Education Component, you will learn:

- Basic Johne's disease information such as the cause, clinical stages, transmission, etc.
- Management strategies related to. . .
  - Manure and waste
  - Colostrum and milk
  - Calves and young stock
  - Herd additions and high-risk animals
  - Biosecurity
  - Infected animals
- Control and testing strategies
  - Testing options
  - Test interpretation
  - Using test results
- State program components

This education can be provided through classroom settings, one-on-one sessions, or online training courses which is provided by your State Designated Johne's Coordinator (DJC). A number of resources are available to increase your understanding of this disease.

To learn more about the education component of the Voluntary Bovine Johne's Disease Control Program, contact your veterinarian or state Designated Johne's Coordinator. A list of DJCs is available online at [www.animalagriculture.org](http://www.animalagriculture.org).

## MANAGEMENT COMPONENT: BEST MANAGEMENT PRACTICES

The Management Component recognizes dairy and beef producers who implement specific management practices to control the introduction and/or spread of *MAP*, the bacteria known to cause Johne's disease.

When you participate in the Management Component, you must:

1. Have a Johne's Certified Veterinarian or a trained State or Federal animal health official conduct an on-farm risk assessment to identify management practices and facility issues likely to introduce or spread *MAP* throughout the herd. A copy of the risk assessment must then be submitted to your state Designated Johne's Coordinator for review.
2. Partner with a Johne's Certified Veterinarian or a trained State or Federal animal health official to develop a herd management plan—known as a Risk Assessment and Management Plan or RAMP—to minimize the spread and/or introduction of *MAP* in the herd. A copy of the management plan must be submitted to your state Designated Johne's Coordinator for review and approval.
3. Implement Johne's disease Best Management Practices.

To continue in the Program, you and a Johne's Certified Veterinarian must review and update the Risk Assessment and Management Plan—RAMP—at least every three (3) years after enrollment and make appropriate changes to the herd management plan as needed. The updated RAMP must be completed and submitted to your state Designated Johne's Coordinator during a window of 60 days either side of the original RAMP anniversary date.

Although individual animal or herd testing for Johne's disease at this level of participation in the National Johne's Disease Control Program is optional, it is strongly encouraged that you discuss whether Johne's testing is right for your herd during your initial and renewal RAMPs with your certified Johne's veterinarian.





## Biosecurity Measures—*Dairy*

All cattle should be individually identified using official eartags, and minimum biosecurity measures to help reduce exposure to manure or milk from cattle of unknown Johne's disease status should be implemented.

**“Michigan’s participating in USDA’s National Johne’s Disease Demonstration Project shows us that, though there is no cure for Johne’s disease, with proper management dairy farmers can prevent the spread of the disease on their farms and reduce its prevalence over time.”**

*—Dr. Dan Grooms*

*Michigan State University associate professor of large animal clinical sciences and a large animal veterinarian*

Minimum biosecurity measures include:

- Maternity calving areas should be kept clean, dry and free of manure. Individual calving pens should be utilized. If individual calving pens are not used, then cow density should be minimized. The maternity/calving area should not house non-calving or sick animals, nor should it be immediately adjacent to mature animal housing areas.
- Heifer calves and bull calves that will be retained in the herd or sold for dairy purposes should be immediately separated from adult animals.
- Each calf should be fed colostrum from an identified, low-risk, test-negative cow or given a suitable, quality colostrum replacer.
- After receiving colostrum, calves should receive only pasteurized milk or a quality milk replacer.
- Young stock should be housed by age, separated from older animals and kept free from exposure to the manure of mature cattle.
- Animals added to the herd should come only from status-level or documented low-risk sources. Unless a producer has evidence to the contrary, herd additions should be managed as higher risk animals and the source of the additions recorded.
- Manure contamination of feed, water, equipment and vehicles should be minimized.
- Clinical suspects should be segregated, tested and removed from the herd as soon as possible. Official test-positive cattle should be humanely euthanized or sent to slaughter.

## Biosecurity Measures—Beef

All cattle should be individually identified using official eartags, and minimum biosecurity measures to help reduce exposure to manure or milk from cattle of unknown Johne's disease status should be implemented.

Minimum biosecurity measures include:

- Maternity calving areas should be kept clean, dry and free of manure. Individual calving pens should be utilized. If individual calving pens are not used, then cow density should be minimized. The maternity/calving area should not house non-calving or sick animals, nor should it be immediately adjacent to mature animal housing areas.
- Pen and/or pasture density of cow and calf pairs post-calving should be minimized as much as possible.
- If colostrum is bottlefed, it should be from an identified, low-risk, test-negative cow or be a suitable quality colostrum replacer.
- Weaned replacement animals should be raised physically separated from older animals.
- Animals added to the herd should come only from status-level or documented low-risk sources. Unless a producer has evidence to the contrary, herd additions should be managed as higher risk animals and the source of the additions recorded.
- Manure contamination of feed, water, equipment and vehicles should be minimized.
- Clinical suspects should be segregated, tested and removed from the herd as soon as possible. Official test-positive cattle should be humanely euthanized or sent to slaughter.

**“The beef industry has an opportunity to deal with Johne’s disease when it apparently occurs at a fairly low prevalence. There are a lot of reasons to be motivated to do something about this disease—one being a producer’s bottom line.”**

*—Dr. Dave Dargatz  
National Animal Health Monitoring Systems*

## TESTING—*For Non-classification Purposes*

If you have culled one or more animals for unresponsive chronic diarrhea combined with reduced milk production and thin body condition, then Johne's disease could be within your herd. Experts maintain that cows are leaving herds way too fast—before they are tested for Johne's disease.

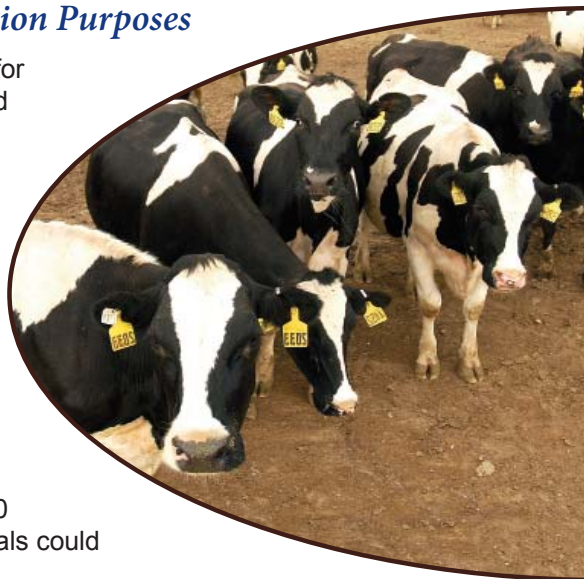
Because Johne's disease must be managed as a herd problem and not tackled as an individual cow disease, herd testing is recommended.

Research shows that diagnosis of one clinically-infected animal in a herd of 100 cows implies that at least 25 other animals could be infected.

Herd testing can help determine the prevalence of Johne's disease within your herd. The lower the prevalence level, the lower the risk for transmitting Johne's disease within your herd and to other herds when animals are sold.

Testing for Johne's disease can help you:

1. Determine if an animal exhibiting definite clinical signs has Johne's disease and should be culled.
2. Identify infected animals with suspicious clinical signs early before they further contaminate facilities and lose salvage value.
3. Evaluate the extent of infection in your herd.
4. Monitor progress of control efforts.
5. Know if you are marketing infected or low-risk cattle and, as a result, know if you are contributing to the spread of the disease to other producers' herds or helping fellow producers prevent Johne's disease from entering their herd.
6. Know if you are about to purchase a Johne's disease test-positive or low-risk animal before it's brought into the herd.



**Consult with your herd veterinarian for the appropriate testing strategy for your farm. You need to know how you will use the test results before you take the sample. Make a plan and stick to it.**

### *Testing Dairy Animals*

Approved testing methods that can be used to determine the presence or absence of *MAP* within a dairy herd include:

- USDA-approved ELISA Testing
  - Milk
  - Serum
- *MAP* Detection Test
  - Fecal culture
  - Fecal direct PCR
  - Environmental sampling—Mixed manure samples collected in areas where a large proportion of the herd is commingled.
  - Pooled fecal sampling—Manure samples are collected from individual animals, then pooled in groups of five.

Johne's test samples **should** be collected by, or under the supervision of, an accredited veterinarian, animal health official or authorized agent, and submitted to a laboratory that has been approved for the requested testing by the National Veterinary Services Laboratories.



<sup>1</sup>*Recommended test regimen for the detection of Johne's disease in dairy cattle based on herd type and testing purpose*

Testing Purpose	Seedstock - Dairy	Commercial - Dairy
Confirm a clinical diagnosis in a herd with no prior confirmed JD cases	Biopsy specimens, necropsy, bacterial culture or PCR assay – individual animals	Necropsy, bacterial culture or PCR assay – individual animals
Confirm a clinical diagnosis in a herd with prior confirmed JD cases	Biopsy specimens, necropsy, bacterial culture or PCR assay – individual animals	ELISA, bacterial culture or PCR assay – individual animals
Control disease in herd with known infection, high prevalence and clinical disease and owner is concerned	Bacterial culture – individual animals	ELISA
Surveillance (estimation of biological burden)	Not recommended	Bacterial culture of environmental fecal samples
Eradication	Bacterial culture by individual or by pooled fecal samples (5 fecal samples/pool)*	Bacterial culture by individual or by pooled fecal samples (5 fecal samples/pool)*

For declaring Voluntary Bovine Johne's Disease Control Program Test Negative Status, use the testing strategies outlined in the Uniform Program Standards for the Voluntary Bovine Johne's Disease Control Program.

\*Pooled samples should be considered only with low prevalence herds. Pooled samples should be collected from individual animals in accordance with the Uniform Program Standards.

<sup>1</sup>"Consensus recommendations on diagnostic testing for the detection of paratuberculosis in cattle in the United States," Michael T. Collins, DVM, PhD, DACVM; Ian A. Gardner, BVSc, MPVM, PhD; Franklyn B. Garry, DVM, MC, DACVM; Allen J. Roussel, DVM, MC, DACVM; Scott J. Wells, DVM, PhD, DACVPM; JAVMA, Vol. 229, No. 12, December 15, 2006.



## Testing Beef Animals

Approved testing methods that can be used to determine the presence or absence of *MAP* within a beef herd include:

- USDA-approved ELISA Testing
  - Serum
- *MAP* Detection Test
  - Fecal culture
  - Fecal direct PCR
  - Pooled fecal sampling—Manure samples are collected from individual animals, then pooled in groups of five.

### *<sup>1</sup>Recommended test regimen for the detection of Johne's disease in beef cattle based on herd type and testing purpose*

Testing Purpose	Seedstock	Cow-Calf
Confirm a clinical diagnosis in a herd with no prior confirmed JD cases	Biopsy specimens, necropsy, bacterial culture or PCR assay – individual animals	Necropsy, bacterial culture or PCR assay – individual animals
Confirm a clinical diagnosis in a herd with prior confirmed JD cases	Biopsy specimens, necropsy, bacterial culture or PCR assay – individual animals	ELISA, bacterial culture or PCR assay – individual animals
Control disease in herd with known infection, high prevalence and clinical disease and owner is concerned	Bacterial culture – individual animals	ELISA
Surveillance (estimation of biological burden)	Not recommended	Bacterial culture of clinically suspect animals
Eradication	Bacterial culture – individual animals	Bacterial culture – individual animals

For declaring Voluntary Bovine Johne's Disease Control Program Test Negative Status, use the testing strategies outlined in the Uniform Program Standards for the Voluntary Bovine Johne's Disease Control Program.

<sup>1</sup>"Consensus recommendations on diagnostic testing for the detection of paratuberculosis in cattle in the United States," Michael T. Collins, DVM, PhD, DACVM; Ian A. Gardner, BVSc, MPVM, PhD; Franklyn B. Garry, DVM, MC, DACVIM; Allen J. Rousset, DVM, MC, DACVIM; Scott J. Wells, DVM, PhD, DACVPM; JAVMA, Vol. 229, No. 12, December 15, 2006.

Each producer should work with his/her veterinarian to determine an individual testing strategy, and update the testing strategy as needed.

## TESTING FOR HERD CLASSIFICATION

Herd Testing for Classification is the highest level of the Voluntary Bovine Johne's Disease Control Program.

Herd testing for classification helps you identify the risk of Johne's disease within your herd based upon the level of infection identified by testing. The higher the Classification level, the lower the risk for transmitting Johne's disease. Therefore, you can use your Classification Level to communicate your herd's level of risk of Johne's disease.

To participate at this level, you must:

- Participate in the Education and Management components.
- Maintain a current approved Risk Assessment and Management Plan (RAMP).
- Test for Johne's disease to determine the herd's test status and to establish a herd classification.

### *Testing Dairy Animals*

Testing methods that can be used to determine the presence or absence of MAP within a dairy herd include:

- USDA-approved ELISA Testing
  - Milk
  - Serum
- MAP Detection Test
  - Fecal culture
  - Fecal direct PCR
  - Environmental sampling— Mixed manure samples collected in areas where a large proportion of the herd is commingled. There are minimal testing numbers required to classify using environmental sampling.
  - Pooled fecal sampling—Fecal samples collected from individual animals pooled together in groups of five. There are minimal testing numbers for herd classification, dependent on herd size.

### *Testing Beef Animals*

Testing methods that can be used to determine the presence or absence of MAP within a beef herd include:

- USDA-approved ELISA Testing - Serum
- MAP Detection Test
  - Fecal culture
  - Fecal direct PCR
  - Pooled fecal sampling—Fecal samples collected from individual animals pooled together in groups of five. There are minimal testing numbers for herd classification, dependent on herd size.

Testing samples **must** be collected by, or under the supervision of, an accredited veterinarian, animal health official or authorized agent, with all samples submitted to a National Veterinary Services Laboratories-approved laboratory.

Testing/Sampling requirements:

- All cattle tested/sampled **must** be 36 months of age or older. In certain cases, such as herd additions, animals under 36 months of age might also need to be tested.
- The number of cattle that **must** be tested is determined by the number of cattle in the herd.
  - In herds with fewer than 300 head that are 36 months of age and older, all cattle 36 months of age and older **must** be tested.
  - In herds with more than 300 head that are 36 months of age or older, the number of cattle that **must** be tested is listed in the first chart on the next page.
- Eligible cows **should** be randomly selected and sampled.
- Large herds **should** include representatives of high-producing group, low-producing group and dry cows, with the percentage of samples collected from each group equal to the percentage of each group of animals in the herd. For example, if 10 percent of the animals in the herd are low producers, then 10 percent of the samples collected should be from low producers.
- Unless a producer is suspicious of infection in the herd, high-risk animals **should not** be targeted.
- All testing for herd classification **should** be as close to random as possible.





### Number of Animals That Must be Tested/Samples Collected to Obtain Classification Level When Using Individual or Pooled Samples\*

Number of Cattle in the Herd 36 Months of Age or Older	Minimum Number of Cattle to Sample that are 36 Months of Age or Older	
	ELISA Testing	MAP Detection Test
300 or fewer head	Test all	Test all
301-400 head	Test all	Test all—up to 313 head
401-500	Test all	324
501-600	Test all—up to 531 head	332
601-700	540	338
701-800	547	342
801-900	552	345
More than 900 head	580	360

\* In herds with fewer than 300 head that are 36 months of age and older, all cattle 36 months of age and older must be tested.

### Maximum Percentage Positive to Achieve Specific Classification Level\*

Classification Level**	1	2	3	4	5	6
<b>Herd Size: 1-99 Head</b>						
ELISA	≤1.5%	0%				
ELISA/Individual MAP Detection Test		0%				
Individual MAP Detection Test	≤6%	≤2%	0%	0%	0%	0%
Pooled MAP Detection Test	≤15%	0%	0%		0%	0%
Environment MAP Detection Test—Dairy Herds Only	0%					
<b>Herd Size: 100-199 Head</b>						
ELISA	≤2.5%	≤1.5%	≤0.5%	0%	0%	0%
ELISA/Individual MAP Detection Test	≤1.0%	0%				
Individual MAP Detection Test	≤6.5%	≤3.5%	≤1.5%	0%	0%	0%
Pooled MAP Detection Test	≤15%	≤10%	0%		0%	0%
Environment MAP Detection Test—Dairy Herds Only	0%					
<b>Herd Size: 200-299 Head</b>						
ELISA	≤3.5%	≤2%	≤1%	0%	0%	0%
ELISA/Individual MAP Detection Test	≤1.5%	≤0.5%	0%			
Individual MAP Detection Test	≤7%	≤4%	≤1.5%	0%	0%	0%
Pooled MAP Detection Test	≤13%	≤10%	≤6%	0%	0%	0%
Environment MAP Detection Test—Dairy Herds Only	0%					
<b>Herd Size: More than 300 Head</b>						
ELISA	≤4%	≤2%	≤1%	0%	0%	0%
ELISA/Individual MAP Detection Test	≤2%	≤1%	≤0.5%	0%	0%	0%
Individual MAP Detection Test	≤7.5%	≤5%	≤2%	0%	0%	0%
Pooled MAP Detection Test	≤11%	≤7%	≤5%	0%	0%	0%
Environment MAP Detection Test—Dairy Herds Only	0%					

\* Percentages cannot be rounded.

\*\* No level of classification classifies a herd as free from infection

■ = Not applicable

*Option for Testing a Minimum Number of Cattle to Achieve Classification Level 1 (If 0 Positive Test Results are Subsequently Obtained)\**

Test	Minimum No. of Cattle to Test
ELISA	60
ELISA-Official Johne's Disease Test	60
Individual Official Johne's Disease Test	30
Pooled Official Johne's Disease Test	6 pools (30 cattle)
Environment Official Johne's Disease Test—Dairy Herds Only	6

*\* If herd size is less than minimum number to test, all eligible cattle in the herd must be tested. If any animals test positive on the minimum test, producers may elect to test the remainder of animals needed to classify the herd according to the "Maximum Proportion or Number Positive to Achieve Specific Classification Level" table.*

## WANT TO LEARN MORE?

If you would like to learn more about participating in the Voluntary Bovine Johne's Disease Control Program, please contact your state Designated Johne's Coordinator. A list of state DJCs is available online at [www.animalagriculture.org](http://www.animalagriculture.org).

Your state DJC can also provide you with the full Voluntary Bovine Johne's Disease Control Program document.

The more you know about Johne's disease and implement Best Management Practices and testing, the greater the opportunity for a healthier bottom line.





