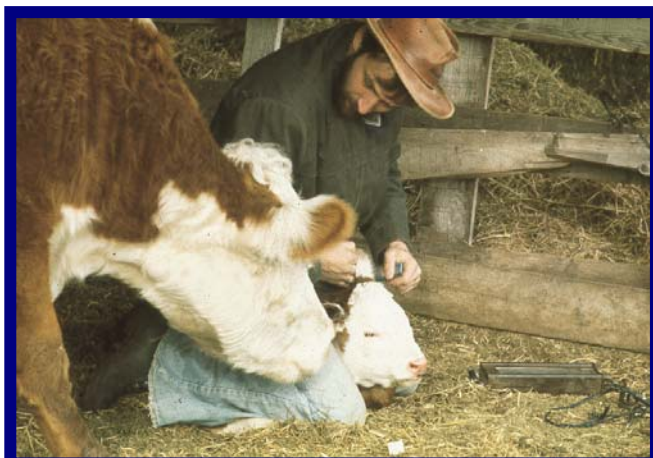


# Colorado Voluntary Bovine Johne's Disease Control Program



---

This publication produced by:

Colorado John's Disease Advisory Committee  
Colorado Division of Animal Health

This publication printed by:

Colorado State University, Department of Animal Sciences

July, 2002

---



Introduction	iii
Acknowledgements	iv
<b>Part I Definitions and Abbreviations</b>	<b>1</b>
<b>Part II Program Administration</b>	<b>7</b>
Confidentiality	7
Designated Johne's Coordinator	7
Qualifications	
Responsibilities	
State Johne's Disease Advisory Committee	8
Recommended Members	
Johne's Certified Veterinarians	9
Qualifications	
Responsibilities	
<b>Part III Program Elements and Procedures</b>	
Education	11
Required Topics	
Management	11
Risk Assessment	
Herd Management Plan	
Renewal	
Herd Testing and Classification	14
Requirements for Entrance	
Test-Positive Component (Control and Testing)	
Test-Negative Component (Herd Status)	
Biosecurity	24
<b>Part IV Laboratory Procedures</b>	<b>25</b>
Approved Laboratories	25
Approval Process - Official Johne's Disease Tests	
Approval Process - Screening Tests (Serology Tests)	
Approved Program Tests	26
Official Johne's Disease Tests	
Screening Test	



**Appendix**

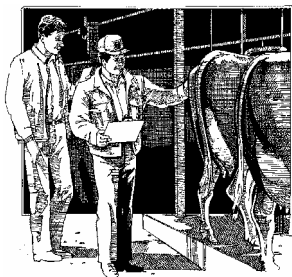
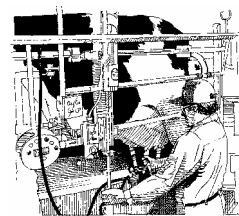
1. Elements of a Herd Risk Assessment	29
2. Guidelines for Developing a Herd Management Plan	35
3. Minimum Biosecurity Measures	41
4. Herd Subset Sampling	43
5. Colorado Voluntary Johne's Disease Herd Placement Flow Chart	45
6. Guidelines for Standard and Fast Track Program Status Levels	47
7. Voluntary Johne's Disease Herd Status Program -Standard Track	49
8. Voluntary Johne's Disease Herd Status Program -Fast Track	51

# Introduction

---



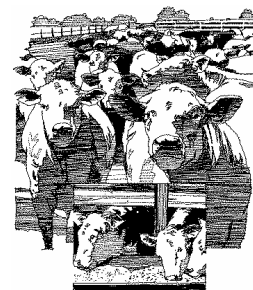
John's Disease is quickly coming to the forefront as an important disease of cattle and with good reason. In the dairy industry, John's Disease is estimated to cost U.S. producers \$1.5 billion annually due to reduced milk production, reduced body weight of cull animals and increased culling. The National Animal Health Monitoring System's 1996 dairy study estimated a cost of \$227 per head in a herd that had at least 10% of the animals infected with John's Disease.



In order to determine if your operation is losing money from John's Disease, first you have to know if it is present in your herd. If you have culled animals because of chronic diarrhea and weight loss, your herd is at a greater risk of having John's Disease. Herd testing is the easiest part of the John's Disease control process, unfortunately, testing and culling is not the best method of disease prevention and control.

The *Colorado Voluntary Bovine John's Disease Control (CVBDC) Program* was developed to ensure education about John's Disease and identify management procedures to reduce the likelihood of transmission to other animals before testing begins.

Dairy cattle are not the only animals at risk. Beef cattle, sheep, goats, llamas and other animals are also at risk. Although many animals are at risk, this program was designed specifically for dairy and beef cattle.



The main objective of the Colorado John's Control Program is to educate livestock producers about John's Disease and give them the tools to prevent, control and even eliminate the disease from a livestock operation. Participation in the program is completely voluntary and the confidentiality of test results will be maintained within the limits of Colorado law. The veterinarian can submit samples under his/her name to maintain herd anonymity.



Colorado Johne's Disease Advisory Committee

- Dr. Marvin Hamann  
Pueblo, CO
- Les Hardesty, Past Chairman  
Greeley, CO
- Dr. Ron Ackerman  
Lakewood, CO
- Dr. Frank Garry, ILM  
Ft. Collins, CO
- Tam Goss, Secretary  
Greeley, CO
- Dr. Ian Stuart  
Lakewood, CO
- Dr. Liz Chandler  
Silt, CO
- Mike Veeman, Chairman  
Loveland, CO
- William Wiles,  
Colorado State University  
Ft. Collins, CO
- Dr. Jerry Diemer  
Lakewood, CO
- Dr. Jan Bowen, Vice Chairman  
Wellington, CO
- J.V. Teague  
Greeley, CO
- Dr. Wayne Cunningham, State Veterinarian  
Lakewood, CO

Special Thanks to:

Western Dairy Promotion Association  
for providing meeting rooms

---

# Part I: Definitions and Abbreviations

---



<b>Accredited veterinarian</b>	A veterinarian approved by the Administrator in accordance with the provisions of 9 CFR part 161 to perform functions required by State-Federal-Industry cooperative programs.
<b>Administrator</b>	The Administrator of APHIS or any person authorized to act for the Administrator.
<b>Animal health official</b>	A full-time employee of the State animal health department or of APHIS who has authority from the State veterinarian or the AVIC to carry out Program activities.
<b>Animal identification</b>	All cattle in a Program herd must be permanently and individually identified using an identification method approved by the State Johnes Advisory Committee. However, Level 4 herds must individually identify all cattle using a USDA approved official identification system.
<b>Anniversary date</b>	The date on which the DTC gave final approval for initial Program participation.
<b>APHIS</b>	Animal and Plant Health Inspection Service.
<b>Approved laboratory</b>	A private, State, Federal, or university laboratory that has passed an annual check test for Johnes Disease administered by NVSL. All Program testing must be done in a laboratory approved by NVSL for the specific test being used.
<b>AVIC</b>	<b>Area Veterinarian in Charge:</b> The veterinary official of VS, APHIS, USDA that is assigned by the Administrator to supervise and perform the official animal health work of APHIS in the state or states concerned.



## Part I: Definitions and Abbreviations

---

<b>Biosecurity</b>	Animal husbandry and hygiene practices designed to limit opportunities for exposure to <i>M. paratuberculosis</i> .
<b>CFR</b>	Code of Federal Regulations.
<b>Commingling</b>	Physical contact or exposure to manure or raw milk of susceptible species. For example, all cattle and other susceptible species grazed together or on the same area of a property or farm, at any time during any 12-month period, are considered to be commingled. Susceptible species include domestic and exotic ruminants such as sheep, goats, cervids and camelids. Exposure to manure via contaminated water or feed sources are also considered commingling.
<b>DJ</b>	<b>Designated Johne's Coordinator:</b> A person who has demonstrated the knowledge and ability to perform the functions required under these Program standards and who has been selected for this position by the State animal health official and the AVIC. The vs. regional Johne's Disease epidemiologist and the vs. Johne's Disease staff must concur in the selection and appointment of the DJ.
<b>ELISA</b>	Enzyme Linked Immunosorbent Assay.
<b>Exposure</b>	Contact with known infected animals; contact with the manure or raw milk of infected or exposed animals of susceptible species; or contact with infected herds via contaminated water or feed sources.
<b>Herd</b>	A group of animals that has been managed as a separate and discrete unit. This may include two or more geographically separated groups of animals under common ownership or supervision, but which have an interchange or movement of animals without regard to health status. The DJ will make the final determination of the herd status of a group of animals.



<b>Herd member</b>	An animal of any susceptible species that is commingled with the herd.
<b>Herd management plan</b>	A written plan, produced by the Johnes certified veterinarian or animal health official in conjunction with the producer, that includes animal husbandry and hygiene practices specific to that herd and that is designed to limit opportunities for exposure to <i>Mycobacterium avium</i> ss <i>paratuberculosis</i> .
<b>Infected animal</b>	An animal that has been confirmed by an official Johnes Disease test to be infected with <i>Mycobacterium avium</i> ss <i>paratuberculosis</i> .
<b>JD</b>	<b>Johnes Disease:</b> An intestinal bacterial disease caused by <i>Mycobacterium avium</i> ss <i>paratuberculosis</i> . Clinical signs, which appear after a long incubation period, include long-lasting or chronic diarrhea and weight loss despite a good appetite.
<b>Johnes certified veterinarian (JCv)</b>	An accredited veterinarian who has received training approved by the DJC for Johnes Disease epidemiology and herd management plan development. For the Voluntary Johnes Disease Program these duties include annual herd visits, animal testing, and producer education. An accredited veterinarian or State or Federal animal health official must collect all samples for Program testing.
<b>Level achievement year</b>	The year a herd in the Herd Testing and Classification element of the Program obtained its current classification.
<b>Management herd</b>	A herd that has completed a risk assessment and herd management plan that satisfies the requirements of the DJC, but has not completed the requirements for the test-negative or test-positive levels.
<b>NVSL</b>	National Veterinary Services Laboratories.
<b>Official eartag</b>	An identification eartag approved by APHIS as being tamper-resistant and providing unique identification



for each animal. An official eartag may conform to the alphanumeric National Uniform Eartagging System, or it may bear the valid premises identification that is used in conjunction with the producer's livestock production numbering system to provide a unique identification number.

**Official John's Disease test** An organism-detection test approved by the Administrator and conducted in a laboratory approved by the Administrator. The Administrator approves laboratories to conduct an official John's Disease test only after determining that the laboratory meets the check test proficiency requirements prescribed by NVSL. Approval continues as long as such check test proficiency requirements are met on an annual basis.

**Pasteurization** Processing milk or other food products by heating and maintaining the temperature long enough to kill certain organisms. (Consult your DVC or JCV.)

**Premises identification number** A unique number assigned by the State animal health official to a livestock production unit that is, in the judgment of the State animal health official and AVIC, epidemiologically distinct from other livestock production units. The premises identification number consists of the State's two-letter postal abbreviation followed by the premises' assigned number or code.

**Program** Voluntary Bovine John's Disease Control Program.

**Screening test** A John's Disease test approved by the Administrator for use in the Voluntary Bovine John's Disease Control Program and conducted in a laboratory validated through an approval process by NVSL. Screening tests are tools that have been developed to aid in determining the presence or absence of *Mycobacterium avium* ss *paratuberculosis* within a herd. Animals found positive to these tests should be considered suspect unless they show clinical signs of John's Disease (in which case they are considered



positive) or they are confirmed positive or negative by an official John's Disease test.

**State**

Any of the 50 States, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, the District of Columbia, and any territories and possessions of the United States.

**State animal health official**

The State official who is responsible for the livestock and poultry disease control and eradication programs in a State.

**State John's Disease  
Advisory Committee**

A group of interested persons organized by the State animal health official to assist in the oversight and coordination of the State's John's Program.

**Susceptible species**

Domestic and exotic ruminants, such as cattle, bison, sheep, goats, cervids, and camelids, which are capable of natural infection with *Mycobacterium avium* ss *paratuberculosis*.

**Test-negative herd**

A herd that is enrolled in the Program, and meets the test-negative component requirements described in this document.

**Test-negative level**

Level 1, 2, 3, or 4 with each increase indicating a lower probability of John's Disease in the herd.

**Test-positive herd**

A herd that is enrolled in the Program and that meets the test-positive component requirements described in this document.

**Test-positive level**

Level A, B, C, or D, with Level A indicating zero or an extremely low prevalence and D indicating the highest prevalence of John's Disease in the herd.

**VS**

**Veterinary Services:** The division of APHIS in charge of animal health activities within the United States.

**USDA**

United States Department of Agriculture.



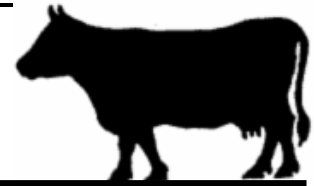
## Part I: Definitions and Abbreviations

---

---

# Part II: Program Administration

---



## Confidentiality

Within the limits of Colorado law, it is important to maintain as much confidentiality of testing results as possible. The Colorado State Veterinarian's Office will be notified of positive results from the official fecal culture tests. Notification will not result in quarantine or regulatory action. Herd anonymity can be maintained by submitting fecal samples under the name of the herd veterinarian, because Colorado specifically protects client-veterinarian confidentiality.



Federal regulations restrict interstate movement of fecal culture positive cattle. Questions regarding movement should be directed to animal health officials. At the same time, to promote the program, stimulate the marketplace to assign added value to animals from program herds and demonstrate the benefits of buying cattle from John's Disease status program herds, it is desirable for owners of status level 1-4 herds to disclose their herd status. Program herd owners have the option of publicly withholding or promoting their herds' status level.

## Designated John's Coordinator (DJC)

Colorado will have one person to act as its DJC. This person should be selected jointly by the State animal health official and the AVIC, and be approved by the VS regional John's Disease epidemiologist/regional director and the John's Disease staff of APHIS, vs. National Animal Health Programs. The DJC will have a 1-year grace period to meet the education and training requirements. During this time period, the candidate is considered to be the acting DJC.

## *Qualifications*

Each DJC candidate must:

1. Be a State, Federal, or university veterinarian.
2. Successfully complete a John's Disease (JD) epidemiology course that includes on-farm risk assessments and herd management plan development.
3. Have at least 80 hours of experience in assessing risk, developing herd plans, and classifying JD test-positive animals and herds.



### *Responsibilities*

The DJC has the responsibility to :

1. Interpret laboratory test results and classify animals and herds based on the use of official and screening tests.
2. Provide training for State personnel performing Program work.
3. Provide training for John's certified veterinarians and develop a mechanism within the State to evaluate/monitor the involvement of the John's certified veterinarians.
4. Review the risk assessments and herd management plans submitted by herd owners and John's certified veterinarians.
5. Periodically audit the Program to determine if it is adequately controlling JD in the State.
6. Assist animal health officials, herd owners, and the herd owner's John's certified veterinarian with developing herd management plans as requested/needed.
7. Participate in the Program activities as a member of the State John's Disease Advisory Committee.
8. Provide a quarterly report to the VS regional John's Disease epidemiologist and the John's staff of VS, National Animal Health Programs, on the progress of the Program .

### Colorado John's Disease Advisory Committee

John's Disease advisory committee has been formed to assist the State in Program development, implementation, and review . A representative at the producer level, for either the beef or the dairy industry, is recommended as the chairperson for the group . The DJC must be a member. The group must meet at least once a year.

### *Recommended members*

This group should include, but not be limited to :

1. Dairy producers- purebred, commercial, and commodity groups
2. Beef producers- purebred, commercial, and commodity groups
3. University/extension faculty
4. Animal health diagnostic laboratory personnel
5. Regulatory veterinary medical officers- State, Federal, and/or field services
6. Veterinary practitioners- beef and dairy



---

## Johne's Certified Veterinarians

Colorado may elect to use the services of private practitioners in addition to State or Federal personnel to assist herd owners in conducting risk assessments and developing herd management plans. The DJC, Colorado State Veterinarian, and the AVIC must determine that these veterinarians meet the qualifications listed below. The DJC needs to develop a process to closely monitor the herd management plans developed by new Johne's certified veterinarians. For example, the DJC may require the new Johne's certified veterinarian to develop the first one-to-five herd management plans in conjunction with an experienced animal health official. Johne's certified veterinarians will be required to take a JD refresher course approved by the DJC at least once every 3 years.

### *Qualifications*

Johne's certified veterinarians must be accredited veterinarians, must have received additional education on Johne's Disease, and must be able to demonstrate to the DJC that they have the knowledge needed to:

1. Develop herd management plans.
2. Provide JD risk assessments.
3. Understand JD epidemiology, testing, and test interpretation.
4. Understand State and Federal Program requirements.
5. Collect and submit fecal, tissue, and blood samples for JD testing.

### *Responsibilities*

Johne's certified veterinarians have the responsibility to:

1. Provide risk assessments and develop herd management plans that will meet the approval of the DJC when requested by the herd owners.
2. Collect and submit samples according to the requirements set by the DJC.



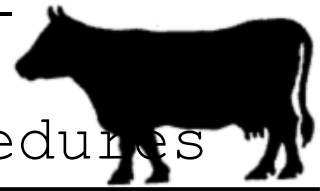




---

# Part III: Program Elements and Procedures

---

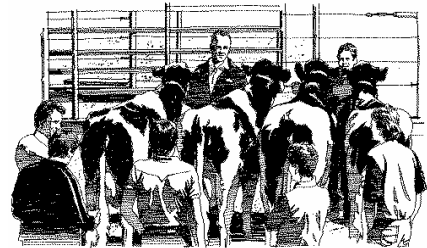


## Education

The education element for Colorado serves as the entry level for producer participation in the State's voluntary Program. The education element must provide producers with basic John's Disease information, management strategies for controlling and eliminating the disease, and information on the various aspects of the State's Program. Education can take place through group workshops or through one-on-one sessions with the producer's veterinarian. Each producer is responsible for maintaining a record of participation and must make that record available to the DJC or JCV. In the education element of the Program, producers should receive information on the topics indicated below.

### Required topics for education

1. Basic JD information— cause, clinical stages, transmission, etc.
2. Management strategies for:
  - a. Manure and waste handling
  - b. Colostrum and milk
  - c. Calves and young stock
  - d. Additions and high-risk animals
  - e. Biosecurity
  - f. Infected animals
3. Control and testing strategies:
  - a. Testing
  - b. Test interpretation
4. The State Program



## Management

Producers informed about John's Disease may wish to participate in the management element, an intermediate step in the Program. This recognizes producers for putting approved management practices and plans into place. At this stage, herd testing is an option available to the producer.

The following components must be completed to the satisfaction of the DJC:



## **1. Risk Assessment (See Appendix 1)**

Prior to developing an individual herd management plan, a risk assessment must be conducted in order to identify aspects of management likely to spread *Mycobacterium avium* ss *paratuberculosis* throughout the herd. A copy of the risk assessment must be submitted with the herd management plan to the DJC.

## **2. Herd Management Plan**

The Johnes certified veterinarian or an animal health official, in conjunction with the herd owner, will develop a herd management plan to prevent the introduction of JD into the herd and to reduce transmission of the disease among animals within the herd. Clinical suspects should be segregated and diagnosed as soon as possible. Culture-positive cattle should be sent to slaughter. A copy of the herd management plan and risk assessment must be submitted to the DJC for review and final approval.

Guidelines for developing a herd management plan can be reviewed by reading "Johnes Disease, a Plan for Pathogen Reduction: Manual for Veterinarians: 1<sup>st</sup> Edition." (See Appendix 2) The herd management plan should address management practices that prevent the calves and young stock from becoming infected with *Mycobacterium avium* ss *paratuberculosis*.

### **The herd management plan must discuss:**

- Animal identification – All cattle must be individually identified using an official ear tag. Any previous regulations listed in Title 9 CFR regarding animal identification with other animal health programs still apply.
- Minimum biosecurity measures (to prevent bringing infection onto the farm) (See Appendix 3). These measures should be in place in order to reduce exposure to manure or milk from cattle of unknown JD status. Care is needed to prevent exposure to other susceptible species (e.g., sheep, goats, farmed deer, camels, non-Program cattle). The herd management plan should include these biosecurity measures:
  - ✓ Animals added to the herd should only come from low-risk or known-status herds and from known sources (do not purchase from sale yards). Record the source, and manage them as higher-risk animals unless you have evidence to the contrary.
  - ✓ Minimize exposure of young stock to manure from adult animals, including other susceptible species. This will vary depending on management of the cattle located on the premises.

- 
- ✓ Minimize exposure of livestock to susceptible animals that are infected or have been exposed to infected animals
  - ✓ Never feed calves unknown sources of colostrum . Never feed calves unknown sources of milk unless it is pasteurized .
  - ✓ Minimize exposure of feed , water , equipment , and vehicles to manure .
  - Minimum management practices– dairy herds
    - ✓ Maternity area must be kept clean and dry and separate from other adult animals .
    - ✓ Each newborn calf must be immediately separated from adult animals .
    - ✓ Colostrum must be from a single identified cow ; no pooled colostrum may be used .
    - ✓ Each calf must be fed colostrum from test-negative or healthy low -risk animal .
    - ✓ Calves must be fed milk replacer or pasteurized milk .
    - ✓ Calves and heifers must be kept free from exposure to mature cattle's manure and must be housed by age , separate from older animals .
    - ✓ Separate clinical suspects from maternity and young stock . Record all clinical suspects .
  - Minimum management practices– beef herds
    - ✓ Keep calving areas as clean and dry as possible .
    - ✓ Minimize the density of cow /calf pairs as much as possible .
    - ✓ Use feeding practices that reduce manure contamination of feed and feeding areas as much as possible .
    - ✓ Colostrum must be from the calf's dam or from another single source that is from test-negative or healthy low -risk animal .
    - ✓ Weaned replacements should be raised separate from older animals .

### *3. Renewal*

To continue in the Program , a herd owner and Johnes certified veterinarian must annually repeat the risk assessment and make appropriate changes to the herd management plan . The updated risk assessment and herd management plan must be submitted to the DJC .



## Herd Testing and Classification

Herd testing and classification constitute the third successive Program element. The purpose of this element is to publicly recognize producers in the Program for putting approved management practices and plans into place, as well as for separating test-negative herds from test-positive herds. Herds at this stage will continue undergoing herd risk assessments and be subject to herd management plans that were developed under the management element. After initial testing, participating herds may participate in either the test-positive or test-negative component of this element according to the test results.

### *Requirements for Entrance*

Herds enrolling in the herd testing and classification element must have completed a risk assessment and developed a herd management plan using the guidelines established in the management element.

#### 1. Testing

- ✓ Initial testing is required to determine the herd's test status. This can be accomplished by doing a screening test or an official John's Disease test on a minimum of 30 randomly selected animals at second lactation (3 years old) or higher. In herds with fewer than 30 animals at second lactation or higher, first-lactation animals (2 years old) must also be included until 30 animals are tested, or until all animals at first lactation and higher have been tested. Herd owners should be encouraged to test statistical subsets (see Appendix 4) or greater numbers of cattle when possible.

For initial testing, all samples should be collected within a short time period (maximum 1 week). Subsequent testing to maintain or improve status level of the herd can begin immediately after the initial test results are recorded, but testing must be completed within 14 months, and cannot be completed in less than 10 months. (The intent of this is so that testing can coincide with other management practices.)

All samples must be collected by or under the supervision of a JCV or a State or Federal animal health official. All samples must be submitted to a laboratory approved by NVSL.

- ✓ **John's Disease Vaccinated herds:** Currently, vaccination for John's Disease is not approved in Colorado. Vaccination can only be done with the approval of the Colorado State Veterinarian. Herds previously vaccinated for John's Disease in another state may enter the Program once vaccination has been discontinued. These herds must utilize an



official Johne's Disease test (organism detection test) as the only test until enough non-vaccinated natural additions qualify for ELISA testing. The number of animals to test at each level remains the same.

## 2. Appealing the status of a test-positive animal

- ✓ For animals found positive to a screening test, a herd owner may elect to confirm the test results as follows:
  1. An official Johne's Disease test must be submitted within 45 days of notification of the screening test results.
  2. If the official Johne's Disease test is negative, the herd may retain its test-negative status, but that animal must be included in the next round of Program testing if that animal remains in the herd.
  3. If the animal that was test positive to a screening test has left the herd so that no confirmation of the results can be obtained, the DJC should conduct a risk assessment to determine the status of the herd.
- ✓ To appeal positive results to an official Johne's Disease test, a herd owner must submit a written statement to the DJC within 30 days of the positive results requesting an appeal, and then, at his/her own expense, arrange for:
  1. Conducting a necropsy of the animal with culture and histopathology of the ileum and of the mesenteric and ileocecal lymph nodes;  
OR
  2. Conducting a full-thickness biopsy of the ileum and biopsy of the mesenteric or ileocecal lymph nodes with histopathology and culture of the tissues and a fecal culture sample taken at the time of biopsy;  
OR
  3. Submitting six separate fecal cultures from the animal on samples collected between 30 and 45 days apart. All six cultures must be negative for the animal to be considered a test-negative animal.
- ✓ The herd JD status will be suspended until all testing is completed. Only negative results on all tests will allow the herd to retain a test-negative status.

## 3. Placement

- ✓ Herds that test positive must remain in the management element or be enrolled in the test-positive component. Herds that test negative will be eligible to enter the test-negative component (Herd Status Program) (See Appendix 5).



### *Test-positive Component (Control and Testing)*

The purpose of the test-positive component is for the State to maintain a record of infected herds that are being tested, with approved risk assessment and herd management plans in place. States may include assessment levels for herd prevalence. Herds enrolled in this component must use testing protocols approved by the DJC.

#### 1. Requirements for herds in the test-positive component

- ✓ **Application** —The herd owner enrolling the herd must sign an agreement to abide by the requirements concerning minimum biosecurity and management, identification, testing, and herd addition strategies. This agreement must be renewed every 10 to 14 months from the anniversary date.
- ✓ **Herd additions**
  1. Participants should purchase animals only from low prevalence herds.
  2. Herd additions from unknown sources should be tested prior to entry into herd.
  3. Heifers raised off the premises should be raised with at least minimum biosecurity and control measures in place.
- ✓ **Testing** —The herd owners along with the John's certified veterinarian must develop a testing protocol as follows:
  1. All samples must be collected by or under the supervision of an accredited veterinarian or a State or Federal animal health official.
  2. John's Disease vaccinated animals must be tested by an official John's Disease test (organism detection test).
  3. All samples must be submitted to a laboratory approved by NVSL.
  4. All animals specified in the test protocol must be tested within 10 to 14 months of the anniversary date.
  5. Herds not adhering to the prescribed testing requirements will be placed in the management element.
  6. It is recommended that animals positive in an official John's Disease test be identified as such and restricted to the premises. When infected cattle leave the herd, it is recommended that they go directly to slaughter or rendering.
  7. A test-positive animal status may be appealed using the same appeal process described above for entry into the herd testing and



classification element. If an animal is removed from the herd while screening test results are pending, a fecal culture should be collected, submitted, and held at the laboratory. This will allow the owner to appeal the herd level if the animal tests positive to a screening test. Final classification of the animal and herd will be made by the DJC.

- ✓ **Optional—assessment levels.** Colorado herds in the state program may achieve Level A, B, C, or D. Each level classifies a herd based on the apparent prevalence of Johne's Disease within the herd. The level achievement year should also be indicated. For example, a herd that completed Level B testing in 1998 and elects to remain at Level B would have a Level B 1998 status. The level achievement year should be noted because continued monitoring increases confidence that the herd prevalence is within that category.

States that use assessment levels must follow the test-positive level requirements listed below:

1. **Level A** —An annual herd test reveals no screening or official Johne's test-positive animals. Level A can be maintained by achieving negative screening test results on 30 second or higher lactation animals every 10-14 months. Herds achieving Level A should be encouraged to enter the test-negative program at Level 1.

**Qualifying herds have:**

- a. Negative test results on at least 30 randomly selected second or higher lactation animals (3 years old or older),
  - b. OR
  - c. Negative test results on the whole herd and on bulls over 2 years of age.
2. **Level B** —An annual whole-herd test with the addition of bulls over 2 years of age reveals less than 5 percent of animals positive to a screening or official Johne's Disease test.
  3. **Level C** —An annual whole-herd test with the addition of bulls over 2 years of age reveals at least 5 percent, but not more than 15 percent, of animals positive to a screening or official Johne's Disease test.
  4. **Level D** —Herds should be classified as Level D if either of the following apply:
    - a. A test on at least 30 randomly selected second or higher lactation animals (3 years old or older) reveals one or more test-positive animals.OR



- b. A whole-herd test with the addition of bulls over 2 years of age reveals more than 15 percent of the animals positive to a screening or official Johnes Disease test.

## 2. Renewal/Advancement

A herd will remain in this classification for up to 14 months. For continuation, the herd owner must reapply with a copy of the test results, updated herd management plan, and an agreement to follow the test-positive component requirements. If the herd owner wishes to renew/advance but is waiting for confirmation of screening test results and therefore cannot meet the 14-month deadline, the herd owner can send the DJC a letter of intent to renew/advance. If the letter of intent is received by 30 days after the deadline, the DJC may allow the herd to retain its status for up to 5 months. Herds for which the necessary test results have not been supplied by the 5-month deadline must be placed in the management element. Owners of removed herds may reapply after the herds complete the required testing.

### *Test-negative Component (Herd Status)*

The test-negative component must include a herd management plan based on the requirements in the management element. The test-negative component includes a series of levels; owners may improve their herd status (achieve a higher level) by additional testing and biosecurity measures. (See Appendix 6) Each higher level represents a greater probability that the herd is free from JD. However, this does not certify that a herd is free of JD. Herds in the test-negative component may remain at any given level by doing monitoring testing or may advance to a greater surveillance level with additional testing.

#### 1. Requirements for herds in the test-negative component include:

- ✓ **Application** —The herd owner enrolling the herd must sign an agreement to abide by the requirements concerning minimum biosecurity and management established in the management element, as well as the identification, testing, and herd-addition requirements listed.
- ✓ **Standard Track** —The herd must meet identification and commingling requirements described in the definitions. Herds enter the Standard Track Program by Johnes ELISA testing 30 (a sample size of 30 was selected to reduce cost while maintaining acceptable accuracy) second lactation or higher animals. No declaration of prior disease freedom is



required. Negative test results on this initial test qualify the herd for Level 1 status (See Appendix 7).

- ✓ **Fast Track** – The herd must meet identification and commingling requirements described in the definitions. Additionally, the herd owner must submit a signed statement that:

1. I am fully aware of the management and disease history of the herd and the property during the past five years.
2. John's Disease is not known or suspected to have existed in the herd for the past five years or on the property during the past twelve months.
3. No cattle are known to have been introduced from confirmed infected herds during the past five years.

The above written statement and a negative ELISA test on a statistical subset of second or higher lactation animals, qualifies the herd for Level 2 status. (See Appendix 8)

- ✓ **Herds tested negative prior to implementation of this program** – Herds that tested negative for John's Disease prior to the implementation of this program may be entered at an assigned Program Level determined after a review by the DJC. That review must include:

1. Verification that the herd meets the minimum standards for testing (fecal culture results can be used in place of ELISA results). Future Program tests must be performed in approved laboratories.
2. Risk assessment of the number, source, and testing history of herd additions made after the first qualifying test.

Additionally, producers wishing to use the Fast Track must make the required written statements for the time period (five years) prior to the first qualifying test.

- ✓ **Herd additions**

1. Purchased heifers and bulls less than 2 years of age may be added to the herd provided that:
  - a. The animal was purchased from a herd with a test-negative level that is equal to or higher than the herd it is entering,  
OR
  - b. The purchased animal is tested in the next herd test after it reaches 2 years of age. Herds containing animals purchased



## Part III: Program Elements and procedures

---

from herds with a low or unknown status will be restricted to Level 1 until all additions reach test eligible age.

2. Purchased or replacement animals 2 years of age or older may be added to the herd provided that:

▪ **For test-negative Level 1, 2, or 3 herds:**

- a. The animal was purchased from a herd with a test-negative level that is equal to or higher than the herd it is entering,
- OR
- b. The animal has a screening test within 30 days prior to entering the test-negative level herd with negative results, and
- c. Fecal cultures have been collected from each animal added and submitted between 30 days before and 30 days after arrival, and
- d. The herd addition is tested on the next herd test. The addition's status will remain at its entry level until it has tested negative at the next herd test.

▪ **For test-negative Level 4 herds:**

- a. The animal was purchased from a herd with a test-negative level that is equal to the herd it is entering,
- OR
- b. The herd of origin has a test-negative level of 2 or 3 and the purchased addition has a screening test with negative results within 30 days prior to entry into the program herd, and
- c. Fecal cultures have been collected from each animal added and submitted between 30 days before and 30 days after arrival, and
- d. The herd addition is tested on the next herd test. The addition's status will remain at its entry level until it has tested negative at the next herd test.

3. Heifers raised off the premises must be raised with the proper biosecurity measures in place and raised with animals at an equal or greater test-negative level.

Test-negative program herds may use semen and embryos from other cattle herds provided that the semen used is processed according to Certified Semen Services standards and the embryos are processed according to International Embryo Transfer Society protocols. Embryo transfer recipient cows must meet herd addition requirements.



- ✓ **Animal identification** –All test eligible animals must be individually identified using an official eartag. Any previous regulations listed in 9 CFR regarding animal identification for any other APHIS program still apply.
- ✓ **Testing**
  1. **Animals to test:** Random sampling will give the most confidence and should be used to select animals for testing. Unless the herd size is too small, the same animals should not be tested in consecutive testing rounds. Groups to be sampled should be selected to be representative of the herd population. This program uses second or higher lactation animals as the most obvious indication of animal age. The testing laboratory must provide detailed requirements for sample handling and submission.
  2. For initial testing, all samples should be collected within a short time period (maximum 1 week). Subsequent testing to maintain or improve status level of the herd can begin immediately after the initial test results are recorded, but testing must be completed within 14 months, and cannot be completed in less than 10 months. (The intent of this is so that testing can coincide with other management practices.)
  3. All samples must be collected by or under the supervision of an accredited veterinarian or a State or Federal animal health official.
  4. Vaccinated herds will be eligible for the test-negative component after vaccination has been discontinued. All testing must be done by an official John's Disease test until enough non-vaccinated natural additions qualify for serology testing. The number of non-vaccinated animals will be the sample size required for that size herd for a statistical subset for serology.
  5. All samples must be submitted to a laboratory approved by NVSL.
  6. Herd removal provisions– If an animal in a test-negative herd tests positive to an official John's Disease test, or if the testing requirements are not followed, the herd must be removed from the test-negative component and placed in the test-positive component or in the management element (unless an appeal is pending). Animals that test positive to a screening test must be confirmed with an official test or their status will be removed or suspended.
  7. Appealing the status of a test-positive animal must be done using the same appeal process as for entry into herd classification and testing.



✓ **Herd advancement – assessment levels (See Appendix 6)**

Test negative herds may achieve Level 1, 2, 3, or 4. Each higher level represents a greater probability that the herd is free from JD. However, this does not certify that a herd is free of JD. The level achievement year should also be indicated. For example, a herd completing Level 2 testing in 1998 and electing to remain at Level 2 would have a Level 2 1998 status. The level achievement year should be noted because continued monitoring increases confidence the herd is not infected. To advance from one level to the next, a statistical subset must be tested (See Appendix 4), and the herd must meet the level requirements listed below for Standard Track or Fast Track test-negative component levels.

1. **Standard Track (See Appendix 7)** – The standard track is designed to allow entry into the Program with a minimal investment of funds and gradually increase the producer's investment in the Program. The standard track will require at least 3 years and 4 tests to reach Level 4.
  - a. Level 1 – The herd owner has developed a herd management plan, and have agreed to abide by the requirements of the test-negative component, and the herd has had negative screening test results on 30 second or higher lactation animals.
  - b. Level 2 – Herds have met the requirements for Level 1, and have had negative screening tests on a statistical subset of second or higher lactation animals. Level 2 testing must be completed within 10-14 months of any Level 1 testing.
  - c. Level 3 – Herds have met the requirements for Level 2 and have had negative fecal culture results on a statistical subset of second and higher lactation herd members. Bulls 2 years of age and older must be included in this testing. The fecal culture must be collected within 10-14 months of any Level 2 testing.
  - d. Level 4 – Herds have met the requirements for Level 3 and have had a negative screening test on a statistical subset of second or higher lactation animals. Level 4 testing must be completed within 10-14 months of any Level 3 testing.
2. **Fast Track (See Appendix 8)** – The fast track allows producers to proceed to a higher level of confidence more quickly than the standard track, but requires greater financial investment at program entry. The fast track will allow herds to reach Level 4 in 2 years with three tests.
  - a. Level 1 – Skip this level if owner signs a declaration that no cows were seen or diagnosed with John's Disease in the past 5 years and has an approved herd plan in place. The State may require the



declaration to be cosigned by the herd veterinarian. The signed declaration must include the following statements:

- I am fully aware of the management and disease history of the herd during the past 5 years.
  - John's Disease is not known or suspected to have existed in the herd during the past 5 years or on the property during the past 12 months.
  - No cattle have been introduced from known infected herds during the past 5 years.
- b. Level 2 – Herds have met requirements for Level 1, and have had a negative screening test on a statistical subset of second or higher lactation animals. Level 2 testing must be completed within 10-14 months of any Level 1 testing.
- c. Level 3 – Herds have met the requirements for Level 2 and have had negative fecal culture results on 30 second or higher lactation cows and all bulls 2 years or older. The fecal culture must be collected within 10-14 months of any Level 2 testing.
- d. Level 4 – Herds have met the requirements for Level 3 and have had a negative screening test on a statistical subset of second or higher lactation animals. Level 4 testing must be completed within 10-14 months of any Level 3 testing.
- ✓ **Herd Level Maintenance** – All levels can be maintained by achieving negative screening test results on 30 second or higher lactation animals every 10-14 months. The level achievement year should continue to be noted because continued monitoring increases confidence the herd is not infected.

## 2. Renewal/Advancement

A herd will remain at any level for up to 14 months. For continuation of this classification, the herd owner must reapply with a copy of negative test results, an updated herd management plan, and an agreement to follow the test-negative component requirements. If a herd owner wishes to renew/advance but is waiting for confirmation of screening test results and therefore cannot meet the 14-month deadline, the herd owner can send the DJC a letter of intent to renew/advance. If the letter of intent is received by 30 days after the deadline, the DJC may allow the herd to retain its status for up to 5 months. Herds for which the necessary test results have not been supplied by the extended 5-month deadline must be removed from the test-negative component. Herds



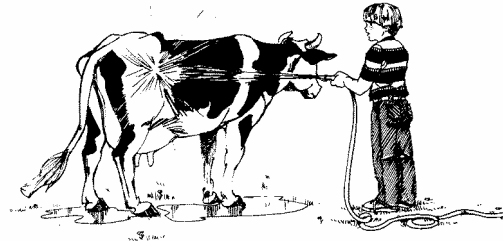
removed from the test-negative component may reapply at the test-negative Level 1.

## Biosecurity

A program herd must have biosecurity measures in place in order to avoid exposure to manure or milk from rum-inants of unknown John's Disease status.

These measures include:

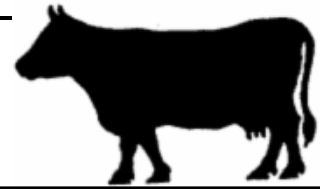
1. Pooled milk from cows of unknown John's Disease status should not be used to feed baby calves.
2. Manure from Embryo Transfer donors or other "visiting" cows (e.g. transport cows that lay over at program farms for rest or to be milked) should not be allowed to come in contact with the program herd and this manure should not be disposed of on pastures or in a manner which would contaminate pastures or animal feed.
3. Exhibition cows and calves (especially under 6 months old) should be hauled in cleaned and disinfected trailers and avoid commingling; (Animal exhibition, consignment sales and transport are considered situations of low *M. paratuberculosis* infection transmission risk. However prudent care and diligence about biosecurity is recommended).
4. A program herd must not be commingled with or grazed behind susceptible species, (e.g. sheep, goats, farmed deer and elk, camels, non-program cattle).



---

# Part IV: Laboratory Procedures

---



## Approved Laboratories

All official screening tests for John's Disease that are used for the Program may be conducted in a private, university, state, or federal laboratory that has been specifically approved for conducting JD testing. The State animal health official has the authority to decide if private laboratories may participate in the Program. States must have the authority to periodically audit the JD diagnostic laboratories participating in the Program. If a laboratory lies outside of the state of Colorado, the state may rely on audits conducted by the animal health officials from that state.

### *Approval process for laboratories performing official John's Disease tests*

- ✓ A laboratory seeking approval to perform official John's Disease tests must contact NVSL for a test kit of 25 samples. (A valid check test sample from NVSL will be determined by a consensus of at least 70 percent of the participating laboratories.)
- ✓ The laboratory must correctly identify 100 percent of the negative test samples.
- ✓ The laboratory must correctly identify 100 percent of the Too Numerous To Count (TNTC) test samples.
- ✓ The laboratory must correctly identify at least 70 percent of the test samples that were not classified as negative or TNTC.
- ✓ The laboratory must use the same procedure and materials during the check test as is used during routine testing.
- ✓ No retest is available within the same fiscal year.

### *Approval process for laboratories performing screening tests (serology tests)*

- ✓ A laboratory seeking approval to perform screening tests must contact the NVSL for a test kit of 25 samples. (A valid check sample will be determined by NVSL using available licensed ELISA kits.)
- ✓ The laboratory must correctly identify at least 90 percent of the serology check test samples.



- ✓ The laboratory must use the same procedure and materials during the check test as is used during routine testing.
- ✓ One retest is available if a laboratory fails the first time.

### Approved Program tests

#### *Official John's Disease tests*

- ✓ **Fecal/tissue culture** – Culture is the standard for organism-based tests although culture methods are not currently standardized. Methods included both solid and liquid culture preparations. Protocols for recommended methods can be obtained from NVSL upon request. Sensitivity is estimated at 40–10 percent; specificity is considered to be 99 percent if done correctly.
- ✓ **DNA probe** – DNA probes can detect the presence of *Mycobacterium avium* ss. *paratuberculosis* without having to grow it. The test has the advantage that it takes a short time (less than 3 days) but has the disadvantages of higher cost and missing low shedders. Sensitivity is estimated at 40 percent; specificity is about 99.9 percent.
- ✓ **Histology of tissue** – **No check test is available at this time.** Microscopic identification of the characteristic pathological changes and of *Mycobacterium avium* ss. *paratuberculosis* organisms in tissue is a definitive test for JD. Tissue changes and bacteria can be observed in the intestinal lining and in nearby ileum, mesenteric, and ileocecal lymph nodes in infected animals. Sensitivity depends on the stage of disease and the number and type of specimens collected, but is typically considered to be greater than for other laboratory tests.

#### *Screening test*

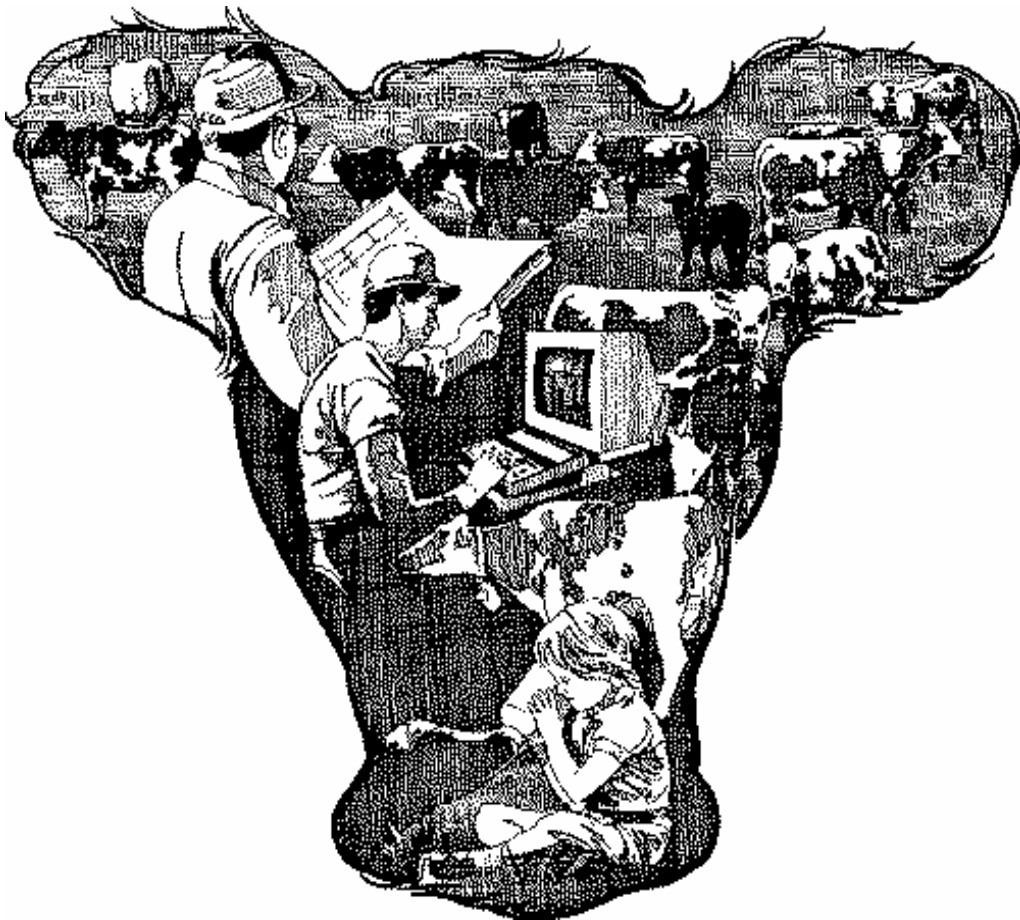
- ✓ **USDA licensed Enzyme Linked Immunosorbent Assay (ELISA)** – All animals found positive in ELISA tests should be considered suspect until confirmed using an official John's Disease test. ELISA tests are to be used as screening tools or for helping make management decisions. Sensitivity has been estimated at 25 percent for nonclinical cases and approximately 85 percent for clinical cases; specificity is between 98 and 99 percent.



---

# Appendix

---



---



### Herd History for Johne's Disease (JD):

#### *Clinical cases in the past:*

- ✓ Enter ID, date, age, source (raised or purchased) and offspring still in herd for animals that were confirmed or suspected of having Johne's Disease in the last 10 years. If there are no records, then memory will suffice.
- ✓ First diagnosed or confirmed case of Johne's in your herd:
- ✓ Source (home raised or purchased)
- ✓ Youngest clinical case (age, year date, source)

### Scoring Johne's Disease Herd Prevalence from the History

#### **Low, Score 1 or 2**

- ✓ No, or only isolated culture-confirmed clinical cases (i.e., greater than 4 years old)
- ✓ Clinical cases 1% or less of herd/year/on average for several years
- ✓ Management history includes low risks for spread (i.e., good hygiene in calving areas, minimal contact between young animals and adult animals or their manure - See Risk Assessment Checklist)

#### **Moderate to Moderate High, Score 3 or 4**

- ✓ Occasional clinical cases or groups of cases in raised animals, generally older (i.e., greater than 3 years).
- ✓ Clinical cases are 2 percent to 5% of herd/year/average over past several years.
- ✓ Number of cases increasing, and/or cases are younger in age (i.e., LT 3 years).
- ✓ Occasional clinical cases in acquired animals.
- ✓ Management history includes some risks for spread in the past (i.e., overcrowding, poor colostrum management, some contact between calves and adult animals, manure contamination of feed or water).

#### **High to Very High, Score 5 or 6**

- ✓ Frequent clinical cases or groups of cases in raised animals.
- ✓ Clinical cases are 6% -10% or greater of herd/year/average over several years.
- ✓ Progressive pattern -prevalence has increased rapidly:
  - increasing number of cases/year over several years.
  - decreasing age of cases.



---

## Appendix 1: Elements of a Herd Risk assessment

- several cases in 2-year-old or younger animals.
- ✓ Significant cost associated with animals culled for Johne's Disease, and/or increased cull rate.
- ✓ Cases may be occurring in acquired animals as well (origin of infection could be origin or current herd)
- ✓ Several risks for spread existed in the past; i.e., poor hygiene in calving area, calves nursed cows, regular contact of young stock with mature animals, manure contamination of feed or water.

Appendix 1: Elements of a Herd Risk  
 Johne's Disease Control-Risk Assessment Checklist for  
 assessment aassesaassessAssessment  
 Dairy Herds



Risk Factor	Max Risk	Herd Risk	Current Comment	Past Comment
<b>Calving Area:</b>				
a. multiple calving area	10	_____		
b. manure build-up	10	_____		
c. calves born in free stalls, tie stalls, other cow areas	10	_____		
d. calving area used for sick cows	10	_____		
e. JD clinicals/suspects in area	10	_____		
f. calves nurse cows	10	_____		
g. manure soiling of calving cows, especially udders	10	_____		
h. calves stay with cows after birth	10	_____		
<b>Risk Total: Calving Area</b>	80		Herd risk x herd prevalence score (1-6) = estimate of total current risk ____	
<b>Pre-weaned Calves:</b>				
a. fed pooled colostrum	10	_____		
b. fed pooled milk	10	_____		
c. calves have direct cow contact	10	_____		
d. calves have indirect cow contact, housed near cows	10	_____		
e. potential for contamination of milk, feed, water, stall with cow manure	10	_____		
<b>Risk Total: Pre-weaned Calves</b>	50		= estimate of total current risk ____	
<b>Weaned Heifers to Breeding:</b>				
a. direct contact with cows/cow manure	5	_____		
b. potential for contamination of feed, water, housing area with cow manure	5	_____		
c. Shared feed, water, facilities with cows	5	_____		
d. shared pasture with cows	5	_____		
e. manure spread on pasture/grazed same season	5	_____		
f. manure contamination of feeding equipment	5	_____		
<b>Risk Total: Weaned Heifers to Breeding</b>	30		= estimate of total current risk ____	



# Appendix 1: Elements of a Herd Risk

Risk Factor	Max Risk	Herd Risk	assessment	
			Current Comment	Past Comment
<b>Bred Heifers:</b>				
a. direct contact with cows/cow manure	4	_____		
b. potential for contamination of feed, water, housing area with cow manure	4	_____		
c. shared feed, water, facilities with cows	4	_____		
d. shared pasture with cows	4	_____		
e. manure spread on pasture/grazed same season	4	_____		
f. manure contamination of feeding equipment	4	_____		
<b>Risk Total: Bred Heifers</b>	24		= estimate of total current risk _____	
<b>Cows/Bulls:</b>				
a. manure contamination of feeders, waterers	4	_____		
b. manure contamination of feed storage, feed equipment	4	_____		
c. manure spread on pasture/grazed same season	4	_____		
d. direct access to manure storage areas	4	_____		
<b>Risk Total: Cows/Bulls</b>	16		= estimate of total current risk _____	
<b>Grand Total</b>	200			

Appendix 1: Elements of a Herd Risk  
 John's Disease Control-Risk Assessment Checklist for  
 Beef Herds



Risk Factor	Max Risk	Herd Risk	Current Comment	Past Comment
<b>Calving Area:</b>				
a. new cow /calf pairs stay with close-up cows after birth	10	_____		
b. manure-soiling of calving cows, especially udders	10	_____		
c. multiple animal use	10	_____		
d. manure build-up	10	_____		
e. calves born in mud and manure	10	_____		
f. calving area used for sick cows	10	_____		
g. JD clinical suspects in area	10	_____		
<b>Risk Total: Calving Area</b>	70		Herd risk x herd prevalence score (1-6) = estimate of total current risk ____	
<b>Pre-weaned Calves:</b>				
a. calves kept in close contact with JD-suspect adults	10	_____		
b. calves continually exposed to fecal waste from adults	10	_____		
c. potential for contamination of feed, water, with cow manure	10	_____		
<b>Risk Total: Pre-weaned Calves</b>	30		= estimate of total current risk ____	
<b>Weaned Heifers to Breeding:</b>				
a. direct contact with adult manure	6	_____		
b. potential for contamination of feed, water, housing area with adult manure	6	_____		
c. shared feed, water, facilities with cows	6	_____		
d. shared pasture with cows	6	_____		
e. manure spread on pasture and grazed same season	6	_____		
<b>Risk Total: Weaned Heifers to Breeding</b>	30		= estimate of total current risk ____	



## Appendix 1: Elements of a Herd Risk

Risk Factor	Max Risk	Herd Risk	Current Comment	Past Comment
<i>assessment</i>				
<b>Bred Heifers:</b>				
a. direct contact with cow s/cow manure	4	_____		
b. potential for contamination of feed, water, housing area with cow manure	4	_____		
c. shared feed, water, facilities with cows	4	_____		
d. shared pasture with cows	4	_____		
e. manure spread on pasture and grazed same season	4	_____		
<b>Risk Total: Bred heifers</b>	20		= estimate of total current risk _____	
<b>Cows/Bulls:</b>				
e. manure contamination of feeders, waterers	4	_____		
f. manure contamination of feed storage, feed equipment	4	_____		
g. manure spread on pasture/grazed same season	4	_____		
h. direct access to manure storage areas	4	_____		
<b>Risk Total: Cows/Bulls</b>	16		= estimate of total current risk _____	
<b><i>Grand Total</i></b>	166			

## Appendix 2: Guidelines for Developing a Herd



### Management Plan

(Adapted from Johnes Disease, a Plan for Pathogen Reduction: Manual for Veterinarians)

#### Herd Information

- ✓ Farm name and contact information
- ✓ Herd Veterinarian
- ✓ Key farm management (decision-makers, key employees)
- ✓ Type of operation
- ✓ Herd size: adult cattle, yearlings, birth to 12 months

#### Herd goals (include future herd size)

- ✓ Next 2 years; 3 to 5 years; 10 years.
- ✓ Current and future source(s) of herd replacements
- ✓ Current herd performance
- ✓ Performance goals
- ✓ Herd health concerns you are addressing or plan to address
- ✓ Management concerns you are addressing or plan to address
- ✓ Area(s) you want to change to improve profitability

#### Define overall scope of plan

- ✓ Review overall risk for spread of Johnes Disease
- ✓ Review Johnes Disease prevention or control goals
- ✓ Prioritize management strategies
- ✓ Address highest risk areas first. You may not be able to address all risk areas at once, so think about developing a long-term plan to improve management in all risk areas.
- ✓ Determine the time frame to meet main goal(s)
- ✓ Use the overall risk assessment to prioritize areas of needed improvement and match with enterprise goals, capabilities and commitment of personnel doing the work of the plan and the economic limits of the various options chosen.
- ✓ Indicate the aggressiveness needed in a control plan to meet your time frame.



## Appendix 2: Guidelines for Developing a Herd

### Management Plan

---

#### Determine management strategies

- ✓ List management strategies to implement
  - List the people on the team and their primary responsibility in implementing this plan.
  - List priority and target dates for implementing management.
- ✓ Key Elements
  - List other health management objectives that will be integrated with and benefit from John's preventive efforts; i.e., what other diseases will be prevented or controlled.

#### 1. Calving management

- ✓ Management objective: keep it clean and dry
- ✓ Suggestions for achieving objective:
  - For inside area: use area for calving only; use single animal pens if possible; assure adequate size area; remove manure and bedding after each use; always have adequate bedding.
  - For outside calving areas: use adequate area and monitor use to minimize mud and manure accumulation; remove cow/calf pairs immediately after bonding from calving area.
  - Clean and clip udder before calving and remove calf immediately after birth.
- ✓ What specific procedures can you do to achieve goals for the calving area?

#### 2. Calf raising management

- ✓ Pre-weaned calves
  - Management objectives: avoid feeding infective colostrum/milk and to prevent contact with other infectious materials.
  - Suggested procedures to achieve objectives: use colostrum from known JD-free cows; feed 4 qts colostrum within 2 hours; feed milk replacer or pasteurized milk rather than raw milk in JD herds; prevent manure contamination of feed and water; house calves in separate facility/location from cows, manure and traffic; minimize manure transfer from cows to calves (feed calves first, separate equipment, clean boots, etc.).
  - What specific procedures can you do to achieve goals for the pre-weaned calf sector?

## Appendix 2: Guidelines for Developing a Herd



### Management Plan

- Management objectives for this area are to prevent exposure to infective animals and manure and to prevent contamination of feed and water.
- Suggested procedures to achieve objectives: house young stock in totally separate facility; do not commingle young stock with mature animals; do not allow contact with cows or their manure; prevent water drainage from cow areas to young stock areas; do not use common feedbunks or watering tanks for cow and young stock; use separate equipment for feed and manure; design and maintain feed and water areas to prevent manure contamination.
- What specific procedures can you do to achieve goals for the post-weaned calf area?

### 3. Developing heifers

- ✓ Management objectives are: prevent exposure to infective animals and manure and prevent contamination of feed and water sources.
- ✓ Suggested procedures to achieve objectives are: house young stock in separate facility; do not commingle young stock with mature animals; do not allow contact with cows or their manure; prevent water drainage from cow areas to young stock areas; do not use common feedbunks or watering tanks for cows and young stock; use separate equipment for feed and manure; design and maintain feed and water areas to prevent manure contamination; do not give refused cow feed to young stock; avoid vehicle and people traffic from cow areas to young stock areas; do not put young stock on pastures used by cows; do not spread manure on pastures to be grazed by young stock in that grazing season.
- ✓ What specific procedures can you do to achieve goals for the bred heifer area?

### 4. Adult cow management

- ✓ Manure and Animal Risks
  - Management objectives are: minimize contamination of premises.
  - Suggested procedures to achieve objectives are: keep facilities and premises free of manure build-up; haul and store manure away from feed, water and young animals; restrict access; use tuberculocidal (phenolic or cresylic base) disinfectants after manure is removed and area is cleaned.



## Appendix 2: Guidelines for Developing a Herd

### Management Plan

---

- What specific procedures can you do to achieve the management goal for this concern?
  - ✓ Cows
    - Management objectives are: eliminate high-risk animals; manage test-positive animals
    - Suggested procedures to achieve objectives are: segregate, test, cull all animals with clinical signs of JD as soon as possible; manage asymptomatic JD test-positive animals to reduce premises contamination; cull when economically feasible.
    - What specific procedures can you do to achieve the management goals for this sector?
  - ✓ Herd testing
    - Management objectives are: to determine presence and/or prevalence of disease; identify infected animals; monitor progress of herd management plan.
    - Suggested procedures to achieve those objectives are: test suspects to know status and track clinical cull rate; do baseline herd test to assess prevalence and target control; use results appropriately as part of management plan; test herd regularly to complement and enhance preventive management efforts; use results appropriately as part of management plan; test suspects to know status and track clinical cull rate.
    - What specific procedures can you do to achieve goals for the herd testing area?

### 5. Records

- ✓ Management objectives are: know baseline or beginning disease status; identify infected animals and their offspring; determine costs of disease and/or plan; help monitor progress and compliance with farm or ranch plan.
- ✓ Suggested procedures to achieve objectives are: ID test-positive animals; record body condition score, salvage value of Johnes' culls to track cost in herd; develop management plan checklist to review monthly; periodically review and update checklist with herd veterinarian and other herd decision-makers.
- ✓ What specific procedures can you do to achieve the goals for the records area?

## Appendix 2: Guidelines for Developing a Herd



---

### Management Plan

#### 6. Culling and replacement strategy

✓ Acquired animals

- Management objective are: not to purchase or bring back Johnes-infected animals.

Suggested procedures to achieve objective are: know identity, JD history and JD testing record of herd(s) of origin; avoid buying animals from herd with JD risk higher than your herd; test acquired animals – serology or fecal culture; do not buy or retain any test-positives; segregate and/or prevent oral/fecal contact with young stock until test status is known.

- What specific procedures can you do to achieve the management goal for this concern?

#### Determine testing specifics

✓ Define testing component.

✓ How aggressive are your objectives for controlling Johnes in the herd?

- Minimally aggressive: primarily preventive management; maintain a low prevalence herd; prevent from getting worse; unknown status herd/Johnes-free herd; minimize risk if JD infection is present.
- Moderately aggressive: preventive management plus testing and culling; reduce spread, prevalence, clinical disease; premises contamination.
- Very aggressive: thorough preventive management; repeated herd test with cull and management of positives; reduce prevalence, rate of spread; clinical disease to zero; eliminate the infected cattle in minimal time.

✓ How do you plan to use test results? Making these decisions will aid in selecting appropriate test(s) and in defining your overall strategy for a prevention/control plan.

- Screen to estimate problem /prevalence, help define need to control
- ID most infectious individuals to cull
- ID asymptomatic infected individuals to manage
- Determine/achieve low-risk herd
- Anticipate repeated herd testing?
- Herd certification
- Other



## Appendix 2: Guidelines for Developing a Herd

---

### Management Plan

- ✓ What animals do you want to test?
  - Herd -all at once or groups
  - High-risk groups
  - Target group; i.e., replacement dams, acquired animals
  - Clinical John's suspects
  - Statistical sample -estimate herd prevalence
- ✓ How will testing complement your management efforts in meeting goals?
  - Are you able to implement management that is adequate to control spread of JD?
  - Can positives be segregated, culled, managed in the operation?
  - Consider how to optimize the effects of risk management and test-and-cull strategies by putting them in place together.

Review plan feasibility and define follow through and accountability

- ✓ Establish a team and implement the plan. The plan should be comprehensive to be effective, and practical and feasible to implement to successfully meet the John's control objectives for the farm.
- ✓ Plans continue to evolve
  - Plan strategy should be effective enough to meet control goals.
  - Plan is practical or feasible to implement.
  - Plan designed to fit with other management objectives and resources.
  - Plan designed to fit with farm's business objectives.
- ✓ Define a routine for monitoring implementation, evaluating and modifying the John's plan on a regular basis; i.e., review plan checklist routinely with veterinarian.
  - Plan to monitor and assess implementation and effectiveness on a regular basis; i.e., seasonal checklist.
  - Plan to evaluate the feedback; i.e., identify and discuss areas "not working" each season/month; define priority and plan for areas needing attention.
  - Assure plan is modified as needed; i.e., seasonal/monthly monitored information provides basis for determining need and ideas for modification.



Minimum biosecurity should be part of all herd management plans in order to reduce exposure to manure or milk from susceptible species of unknown JD status.

These measures should include but are not limited to:

- ✓ Pooled milk from cows of unknown JD status should not be used to feed calves.
- ✓ Minimize exposure of feed and water to manure.
- ✓ Manage all livestock to minimize exposure to susceptible animals of unknown status.
- ✓ Manage young stock to avoid, when practical, exposure to manure from adult animals. This will vary depending on management of the cattle located on the premises.
- ✓ Program herds must not be commingled with or grazed behind susceptible species of unknown status, (e.g. sheep, goats, farmed deer and elk, camels, non-program cattle).
- ✓ Manure from Embryo Transfer donors or other "visiting" cows (e.g. transport cows that are kept at program farms for rest or to be milked) should not be allowed to come into contact with animals of the program herd and this manure should not be disposed of on pastures or in a manner which would contaminate pastures or animal feed.
- ✓ Exhibition cows and calves (especially under 6 months old) should be hauled in cleaned and disinfected trailers and not commingled. (Animal exhibition, consignment sales and transport are considered situations of low *Mycobacterium avium* ss *paratuberculosis* transmission risk, however, prudent care and diligence about biosecurity is recommended).

---



Sample numbers in the table below have been based on the following assumptions:

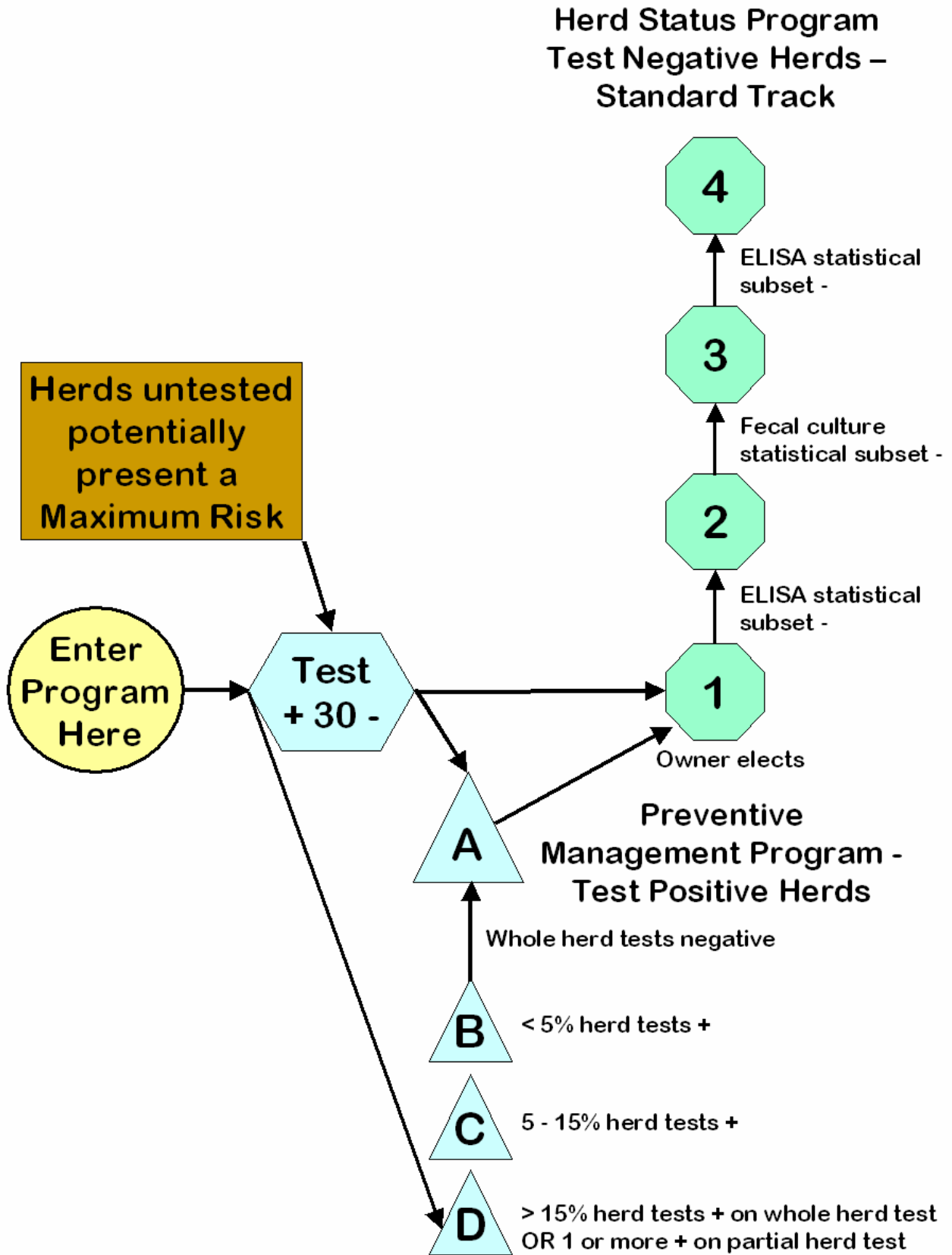
- ✓ The cattle to be tested are in second or higher lactation.
- ✓ For these calculations, 25% test sensitivity of the ELISA and 40% test sensitivity of the fecal culture were assumed (these were consensus estimates of the Herd Status Committee of the National Johne's Working Group, United States Animal Health Association for sub-clinically infected cows in first or higher lactation, and no changes were made for older populations sampled).
- ✓ For these calculations, 100% test specificity of the ELISA and fecal culture was assumed (given follow-up of all ELISA positives with fecal culture)
- ✓ The confidence of detecting infection (at least 1 test-positive cow), if present at a true prevalence of 2%, is 95%.
- ✓ Sampling without replacement.

# Cows in Herd (2 <sup>nd</sup> or higher lactation)	# Cattle to Sample (2 <sup>nd</sup> or higher lactation)	
	ELISA	Fecal culture
< 300	test all	test all
301 -400	test all	313
401 -500	test all	324
501 -600	531	332
601 -700	540	338
701 -800	547	342
801 -900	552	345
> = 901	580	360

In smaller herds, all cattle second or higher lactation must be tested.  
 In herds with less than 30 second and higher lactation animals, first lactation animals must also be tested.

---

Appendix 5: Colorado Voluntary  
 Johne's Disease Herd Placement Flow  
 Chart



---

## Appendix 6: Guidelines for Standard and Fast Track Program status



### Levels Herd Status Levels

Herds may achieve status Levels 1, 2, 3, or 4. Each level of increase indicates higher confidence in the Johnes Disease free status of the herd. The Level achievement year should also be indicated. For example, a herd completing status Level 2 testing in 1998 and elects to remain at status Level 2 would have Level 2 1998 status. The Level achievement year should be noted because continued monitoring increases confidence the herd is not infected.

#### Standard Track

The standard track is designed to allow entry to the program with a minimal investment of funds and gradually increases the producer's investment in the program. The standard track will require at least three years and four tests to reach Level 4. Additional testing requirements are included with the status levels (time of testing, number of testing, etc.) If an animal is removed from the herd while screening test results are pending, a fecal culture should be collected, submitted, and held at the laboratory. This will allow, if the owner wishes, an appeal of herd status to be made if the animal tests positive to a screening test.

**Status Level 1** - Herds have developed a herd biosecurity plan and had negative screening test results on 30 second or higher lactation animals. A sample size of thirty was selected to optimize herd sensitivity and herd specificity and maintain a fixed cost for all herds entering the program. This status is maintained by achieving negative screening test results on 30 second or higher lactation animals every 10 - 14 months.

**Status Level 2** - Herds have met the requirements for Level 1, and had negative screening test on a statistical subset of second or higher lactation animals. A statistical subset that is negative by fecal culture will also qualify for advancement. Level 2 testing must be completed within 10-14 months of any Level 1 testing. Level 2 status is maintained by achieving negative screening test results on 30 second or higher lactation animals every 10 - 14 months.

**Status Level 3** - Herds have met the requirements for Level 2 and had negative fecal culture results on a statistical subset of second and higher lactation herd members. Bulls two years of age and older must be included in this testing. The fecal culture must be collected within 10 - 14 months of any Level 2 testing. Level 3 status is maintained by achieving negative screening test results on 30 second or higher lactation animals every 10 - 14 months.

**Status Level 4** - Herds have met the requirements for Level 3 and had a negative screening test on a statistical subset of second or higher lactation animals. A statistical subset that is negative by fecal culture will also qualify for advancement. Level 4 testing must be completed within 10 - 14 months of any Level 3 testing. Level 4 status is maintained by achieving negative screening test results on 30 second or higher lactation animals every 10 - 14 months.



## Appendix 6: Guidelines for Standard and Fast Track Program status Levels

---

### Fast Track

The fast track allows producers to proceed to a higher status level of confidence more quickly than the standard track, but requires greater financial investment at program entry. The fast track will allow herds to reach Level 4 in two years with three tests.

**Status Level 1** - Skip this level if owner is able to make a declaration that no cows were seen or diagnosed with John's Disease in past 5 years. The State may require the statement to be cosigned by the herd veterinarian. A signed statement must include:

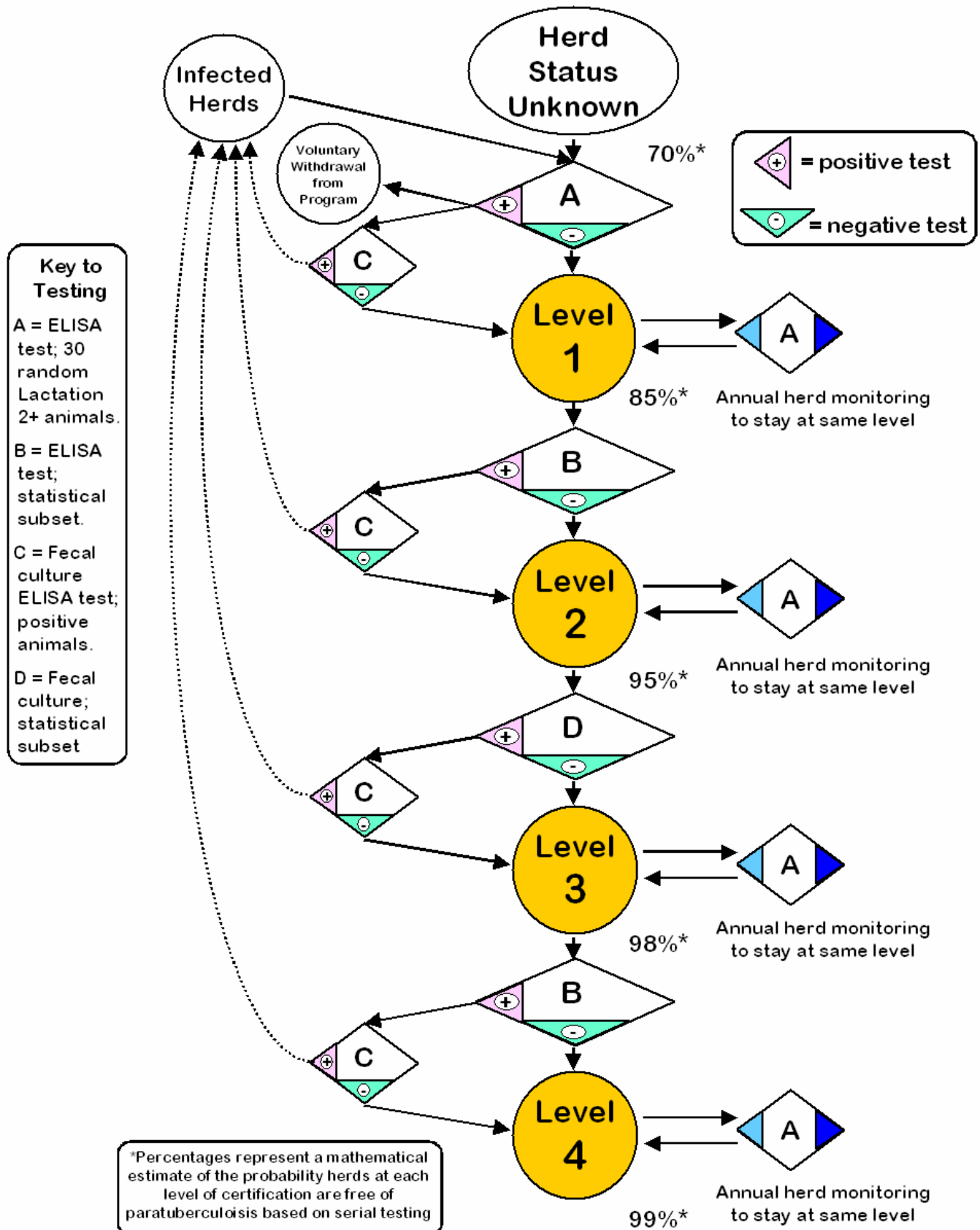
- ✓ I am fully aware of the management and disease history of the herd and the past five years.
- ✓ John's Disease is not known or suspected to have existed in the herd for the past five years or on the property during the past twelve months.
- ✓ Cattle have not been introduced from known infected herds during the past five years.

**Status Level 2** - Herds have met requirements for Level 1, and negative screening test on a statistical subset of second or higher lactation animals. A statistical subset that is negative by fecal culture will also qualify for advancement. Level 2 testing must be completed within 10-14 months of any Level 1 testing. Level 2 status is maintained by achieving negative screening test results on 30 second or higher lactation animals every 10-14 months.

**Status Level 3** - Herds have met the requirements for Level 2 and have negative fecal culture results on 30 second or higher lactation cows and all bulls 2 years or older. The fecal culture must be collected within 10-14 months of any Level 2 testing. Level 3 status is maintained by achieving negative screening test results on 30 second or higher lactation animals every 10-14 months.

**Status Level 4** - Herds have met the requirements for Level 3 and have a negative screening test on a statistical subset of second or higher lactation animals. A statistical subset that is negative by fecal culture will also qualify for advancement. Level 4 testing must be completed within 10-14 months of any Level 3 testing. Level 4 status is maintained by achieving negative screening test results on 30 second or higher lactation animals every 10-14 months.

# Appendix 7: Colorado Voluntary Johne's Disease Herd Status Program - Standard Track

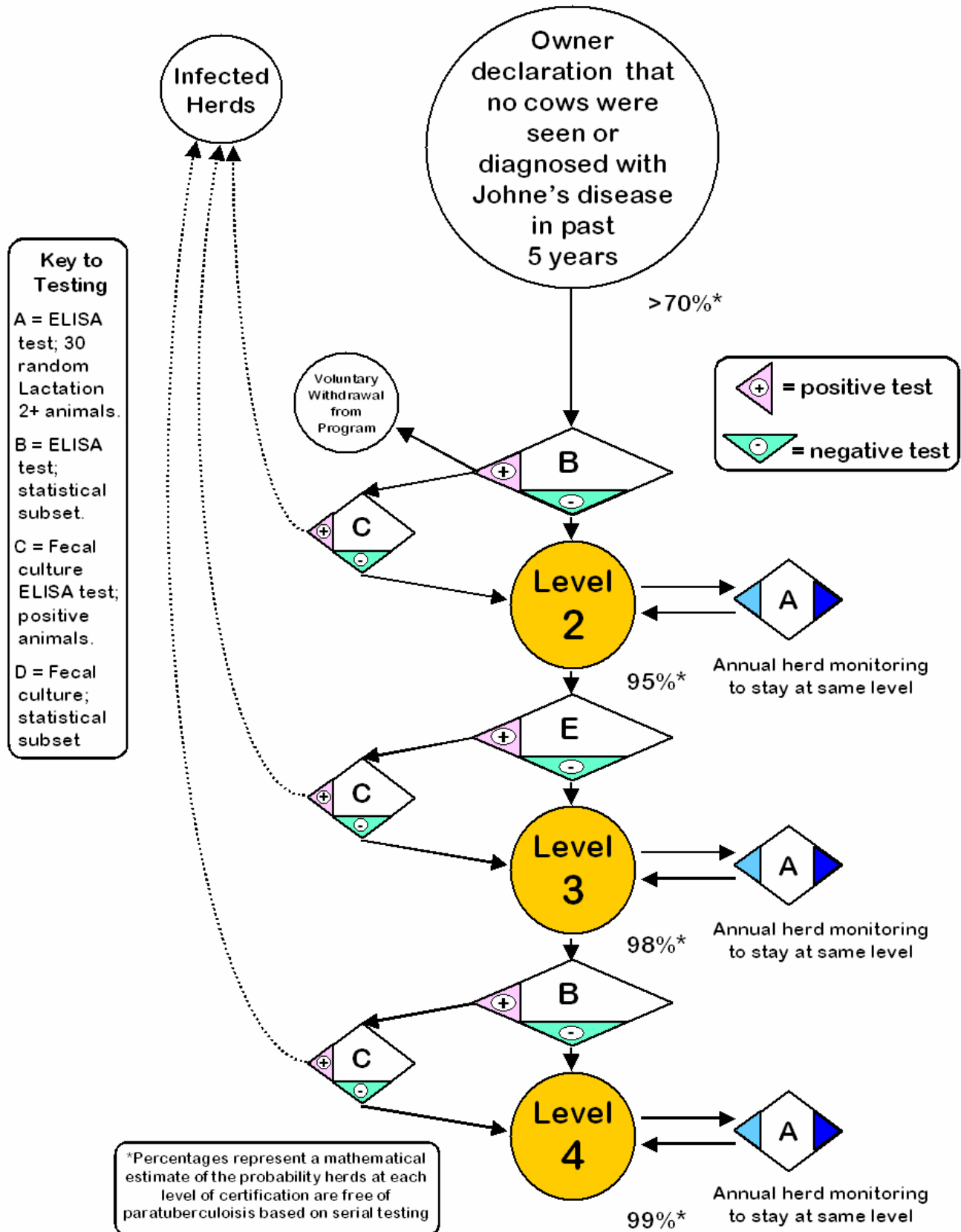


---

# Appendix 8: Colorado Voluntary Johne's Disease Herd Status Program - fast



## Track



---