

## **REPORT OF THE COMMITTEE ON JOHNE'S DISEASE**

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The Committee met on Sunday, October 19, 2014 at the Sheraton Hotel in Kansas City, Missouri, from 12:30-5:30. There were 17 members and 27 guests present.

### **Presentations & Reports**

#### **USDA - Animal and Plant Health Inspection Service Update**

Michael Carter, USDA-APHIS-VS

In the Animal and Plant Health Inspection Service (APHIS) FY 2012 budget, livestock commodities regulated by USDA were organized into 'Commodity Health Line' structures or groupings. APHIS' Cattle Health line supports efforts to protect the health and thereby improve the quality and productivity of the cattle industries. The funding for Cattle Health continued in FY 2014 and as such, Johne's disease is no longer a specified activity.

The National Veterinary Services Laboratories (NVSL) will continue to manage the proficiency tests for milk and serum ELISA, fecal culture and fecal PCR. The cost of proficiency testing will be covered by User Fees. NVSL will also continue to maintain the lists of approved labs for various Johne's disease tests. The Center for Veterinary Biologics will continue its evaluation, approval, licensure and monitoring of diagnostic test kits for Johne's disease since APHIS will need to continue this activity regardless of where the funding comes from.

APHIS will act as a reference point for international import and export negotiations and provide Veterinary Accreditation with guidance as necessary.

Since Johne's is a cattle health disease minimal field activities can continue such as being involved with State education activities but APHIS will not be the driver of State Johne's programs and will not act in the designated coordinator roles. Johne's disease field activity on the State side may be funded as salaries using APHIS cooperative agreement dollars but the State must ensure that cattle health priority issues (surveillance goals, enforcement activities, etc.) are covered within the State.

APHIS will continue to enforce 9 CFR part 80 banning the interstate movement of Johne's disease positive animals unless requirements are met for moving directly to slaughter. And lastly, APHIS will also stay involved with the Mycobacterial Disease of Animals Multistate Initiative both as a Johne's disease and a tuberculosis disease stakeholder to the project.

#### **NJWG Treasurer's report**

Ken Olson, NJWG Treasurer

Pending

#### **NMPF updates**

Jamie Jonker, Vice President of sustainability and scientific affairs NMPF

Report pending

## **NCBA- Johne's Disease Presentation Overview**

Kathy Simmons, Chief Veterinarian NCBA

Johne's disease has been documented in beef herds throughout the United States. Johne's disease is estimated to occur in roughly 8 percent of the beef cattle herds in this country. Johne's disease is a herd problem that worsens with time reducing animal production and profit. Examples of the economic losses seen with Johne's disease include decreased milk production, lighter weaning weights, decreased reproductive efficiency, increased culling rates and death. Beef cattle producers understand the need to take proactive steps to prevent and control Johne's disease in their cattle herds.

In the past year, the National Cattlemen's Beef Association (NCBA) has continued to promote individual herd security against the disease and supported research and educational opportunities for mycobacterial diseases, like Johne's disease, in cattle. Working through the Beef Quality Assurance (BQA) program and NCBA's Herd Security working group in the Cattle Health and Well-being committee, NCBA has encouraged producers to adopt herd security measures to identify, manage and control Johne's disease in their individual cattle herds.

NCBA is concerned with improving Johne's disease control and management in beef cattle herds in the United States. Recently, NCBA supported a research proposal to USDA NIFA for a coordinated agricultural project focusing on Mycobacterial Diseases in Animals--Johne's disease and Bovine Tuberculosis Complex. The project involves five objectives: epidemiology/transmission of these diseases through modeling; development of new diagnostic testing procedures; improved understanding of the biology and pathogenesis of mycobacterial diseases; vaccine development and delivering education and extension materials to key stakeholders. Through our representation on the External Advisory Board for this project, NCBA was able to provide input regarding the outreach and educational piece of the project as well as to identify possible key research outcomes that would result in increased value for producers.

NCBA is committed to advancing education and outreach to promote optimal herd health security practices against diseases, such as Johne's disease. Our efforts are concentrated through the work of the Herd Security working group of the NCBA Cattle Health and Well-being Committee as well as through the guidance provided by the Beef Quality Assurance program. NCBA continues to advocate for continued research into the mycobacterial diseases in order to advance our knowledge for the control and management of these diseases in beef cattle herds within the United States.

## **National Veterinary Services Laboratories 2014 Johne's Serum and Milk ELISA Proficiency Tests Summary**

Charles Lewis, Veterinary Medical Officer, NVSL, Diagnostic Bacteriology Laboratory, Serology Section, Brucella and Mycobacterium Reagent Team and Hemoparasite Reagents Unit

The 2014 Johne's Milk ELISA Proficiency Test kits were distributed in February to 43 laboratories. A total of 47 kits were shipped to participating laboratories. Results were submitted from 68 participating individuals, with 55 individuals utilizing the IDEXX ELISA kit, 12 individuals utilizing the Prionics ELISA kit, and 1 individual using both ELISA kits. Each proficiency test kit contained 25 milk samples supplied by Eastern Laboratory Services that were evaluated at the NVSL prior to distribution. Each kit contained 19 positive samples and 6 negative samples. Results from the Prionics ELISA kit had 100% agreement among all samples. Results from the IDEXX ELISA kit had 100% agreement for 23 samples and 98% agreement for two remaining samples. NVSL approved 43 laboratories to perform the milk ELISA.

The 2014 Johne's Serum ELISA Proficiency Test kits were distributed in late June to 78 laboratories. A total of 87 kits were shipped. Each proficiency test kit contained 20 serum samples with 15 positive and 5 negative samples contained within each kit. Results were submitted from 56 individuals using the IDEXX ELISA kit and 32 individuals using the Prionics ELISA kit. Preliminary results indicate 30 of 32 individuals received satisfactory scores using the Prionics ELISA kit and 56 of 56 individuals received satisfactory scores using the IDEXX ELISA kit. Final result evaluations, laboratory approval, and report distribution will be concluded in late October or early November 2014 to all participating laboratories.

## **2014 Johne's Disease Fecal Proficiency Test Report**

Kevin Stokes, Microbiologist Mycobacteria/Brucella Section NVSL

A total of 59 laboratories participated in the 2014 Johne's Disease Fecal Proficiency Panel (7 Canadian, 4 European Union, 1 New Zealand, 1 Australian and 46 USA laboratories). Compared to 2013, the number of requesting laboratories increased for individual proficiency panels for direct PCR and decreased for liquid and solid culture methods. Requests for pooled proficiency panels increased for direct PCR, and

decreased for liquid and solid culture methods. A total of 168 panels were requested; results were not returned for 6 of them. Of that total, 105 individual panels and 63 pooled panels were shipped. Samples from one animal in the individual panel were deemed invalid due to less than 70% of the samples being called correctly. All laboratories that failed an individual panel were due to misclassifying a negative sample as positive. Three laboratories failed the pooled panel and all three were using direct PCR methods and misclassified a pool with a high shedding animal as negative.

#### **MDA updates**

Vivek Kapur, PI MDA

Report pending

#### **Synergistic parameters in a Test-Cull programme for Johne's Disease in Cattle or Deer**

Frank Griffin, Professor Immunology, Director of the Disease Research Laboratory, University of Otago, Dunedin, New Zealand.

Cost-effective programmes for the control or eradication of *M.paratuberculosis* (*M.ptb*) from herds of ruminants affected by Johne's disease have proved to be elusive. Our group have taken the view that multiple independent test parameters, used on a composite diagnostic platform, will ultimately be required to control disease and prevent infectious spread. This requires the use of immunodiagnostic tests in parallel with quantitative microbiological (qPCR) tests to target animals selectively for slaughter. Accepting that serological testing will produce False(-) results and not all diseased animals will be persistent shedders, other independent parameters can also be taken in to account. In dairy herds, a secondary evaluation is included involving, the animal's condition-score and milk-yield. These are factored into the equation to identify False(-) animals which remain undetected in the primary diagnostic screening. Using these parameters in combination risk from disease can then be stratified and selective culling implemented to provide a control programme that is feasible and sustainable for farmers.

Protocol for Dairy Cows:

1. Whole herd test with Paralisa<sup>TM</sup> to identify all ELISA(+) animals (Score I, II, III)
2. Screen all animals for condition score and identify animals with Low condition as 'At risk' (Score I, II, III)
3. Retest Paralisa<sup>TM</sup> (+) and Low condition score animals using faecal qPCR\* to identify Low, Moderate or High shedders (Score I, II, III)
4. Monitor individual cow milk production and identify animals with a significant drop in milk yield as 'At risk'. Retest using faecal PCR (Score I, II, III)

\* Using modern robotics it has become feasible to test 100s of faecal samples from cattle, deer or sheep relatively inexpensively

Using these parameters in combination it is possible to obtain a summative "Risk score" to identify animals for immediate or future culling. The current composite criteria allow one to select for immediate culling animals who receive a threshold "risk score" (IIIIII and they are out !)

#### **Vaccination as a tool for accelerated eradication of Mycobacterial disease in ruminants in a context of other control programs**

Gregers Jungersen, Professor Adaptive Immunology and Vaccinology, The National Veterinary Institute, Technical University, Denmark, Copenhagen

Report pending.

#### **Improving Rapid Detection and Culture in Mycobacterial Disease of Animals**

Tim Bull, Senior Research Fellow, St. Georges Hospital and Medical School, London, England

Report pending.

#### **Zoetis' New ELISA test for detection of antibodies to Mycobacterium avium ss paratuberculosis**

Matthew Krecic, Senior Technical Services Manager for the US Diagnostics Reference Laboratories division, Zoetis (formerly Pfizer Animal Health)

Zoetis, formerly Pfizer Animal Health, has launched a new ELISA test kit, SERELISA® ParaTB Ab Mono Indirect, licensed for the detection of antibodies to *Mycobacterium avium* ss paratuberculosis within the

sera and plasma of cattle. Pivotal studies involving well-characterized Johne's disease status herds submitted to the USDA for licensure are described. These studies yielded sensitivity of 90.0% (95% CI: 77.95-96.53%) and specificity of 99.6% (95% CI: 98.31-99.77%). SERELISA® ParaTB Ab Mono Indirect is for use by personnel at APHIS-approved Johne's disease serologic laboratories.

**NJWG**

Discussed Best Management Practices in the current JD control program. Focus group survey results presented. The group discussed the potential for future survey to larger sampling of practitioners and producers as well as further evaluation of effectiveness of programs control measures.

**Committee Business:**

One resolution was approved by the committee.