

Animal Health Monitor

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Articles of Interest:

- ⇒ **BC Zoonoses Symposium**
- ⇒ **Pacific Ag Show Highlights**
- ⇒ **Milk C&S Results 3-Yr Comparison**

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Update on Bovine TB in BC and PED in Alberta by Dr. Jane Pritchard

Bovine Tuberculosis (TB) in BC

The investigation and response to the diagnosis of Bovine Tuberculosis (*Mycobacterium bovis*) in a beef cow from British Columbia (BC) continues. Testing the index herd confirmed 3 additional confirmed infected animals in that herd for a total of 4 in all. Trace-outs for the preceding 5 years were primarily for feeder calves and backgrounded steers to terminal feedlots. A total of 13 premises in BC, 16 premises in Alberta (AB) and 1 premise in Saskatchewan (SK) have been placed under movement controls with 2 AB premises having been released already. Approximately 30,000 animals are under movement restriction.



This will vary as trace-out investigations are completed and trace-in investigations continue.

The CFIA has completed culture testing of the tissue samples collected from the original infected animal. Test results have identified the strain of bovine TB to be distinct from any cases previously detected in Canadian wildlife or domestic livestock. This strain is not related to past cases of bovine TB in AB or BC or anywhere else in Canada. The United States Department of Agriculture has confirmed that this strain has not been previously identified by its laboratory service as well. Work continues to determine any related strains globally.

Porcine Epidemic Diarrhea (PED) in Alberta

On January 7, 2019, Alberta Ministry of Agriculture and Forestry (AF) confirmed the first-ever case of PED in Alberta. The positive case was reported by a veterinary practitioner in a 400 head farrow to finish operation.

Since then, the farm and the farm veterinarian have worked closely with Alberta Pork and Alberta AF to manage the disease. Enhanced biosecurity measures are in place for the entire premises to reduce the risk of the virus leaving the site. Since the finding was confirmed, no pigs from the affected farm have been marketed to slaughter or assembly sites in Alberta and there are no plans to do so.



Mesenteric lymph node with granuloma

The investigation is ongoing. All pig traffic in and out of the site has been traced and no transport links have been identified as potential sources.

All environmental surveillance testing from high-traffic pig sites in Alberta, such as assembly sites, abattoirs and truck wash locations, are still negative.

To date, no other cases of PED have been identified in Alberta.

Alberta AF continues to work with Alberta Pork, pork producers, swine veterinarians, and other pork industry stakeholders to investigate this case and prevent further spread of the virus. So far, it is an isolated premise that is infected and feed is suspected as being the source of the virus on the farm. Assembly stations and processing plants remain negative on surveillance testing.

17th Annual BC Zoonoses Symposium by Dr. Brian Radke

The 17th Annual BC Zoonoses Symposium was held November 15, 2018 in Langley at the Langley Golf and Banquet Centre in BC's Fraser Valley. This collaborative, interdisciplinary Symposium provides an opportunity for professionals from across BC to gather, network and learn about disease issues affecting animals and humans. The Symposium is a partnership of the BC Ministry of Agriculture, the BC Centre for Disease Control and the Ministry of Forests, Lands, Natural Resource Operations and Rural Development. IDEXX Laboratories, the two Ministries and the BC Centre for Disease Control were gracious financial sponsors of the 17th Symposium.

The symposia consist of short presentations on a wide variety of One Health topics. The Symposium included information on *Brucella canis* in imported dogs, zoonotic pathogens of fish, a zoonoses update from Washington State, canine influenza in Ontario, farm to fork whole genome sequencing of *Salmonella* Enteritidis, *Cryptococcus gattii* and bat associated viruses. A World Café style discussion of climate change and health was well-received as a way to stay awake following the free lunch. The Café included discussions on cyanobacteria in recreational water, the impact of wildfires on livestock health and production, and winter tick surveillance in BC.

The webinar option, offered for those unable to attend in person, was again well received with over 200 registered participants. Over one hundred people attended in person, maintaining the symposia's history of strong attendance. The audience included public health inspectors, public health physicians, public health researchers, laboratory staff, students and veterinarians. Most of the veterinarians are engaged in public practice and a goal is to increase attendance by private practitioners and animal health technicians. There typically is no registration fee for the symposia, but registration is required for planning purposes, including webinar attendance. Historically, the symposia have been held in November in the lower mainland. It is expected the webinar option will be offered for the 18th Symposium in 2019. Details of the 18th Annual BC Zoonoses Symposium will be included in a future edition of the Animal Health Monitor.

The agenda and webinar broadcasts of the presentations from the 17th Symposium are available at [http://www.bccdc.ca/health-professionals/education-development/zoonotic-symposiums\(zoonoses\)](http://www.bccdc.ca/health-professionals/education-development/zoonotic-symposiums(zoonoses)).

(The agendas and presentations from the two previous symposia are also available at that website.)

21st Annual Pacific Agriculture Show, Abbotsford Tradex—January 24-26, 2019

The Pacific Agriculture Show is the largest and most important agriculture exhibition in the province. This year marked the 21st Annual Show and was the biggest, by far.

The event was attended by over 9,000 visitors and there was a record turnout of over 300 exhibitor booths.

BC's agriculture industry is unique in its diversity and the show attracts an attendance from all the livestock and horticulture sectors including: dairy, cattle, poultry, equine, hogs, llamas, alpacas, to vegetable, berry, grape, bulb, ornamentals, hothouse, flower and shrub growing and more.

Producers, ranchers and farmers appreciate the show, as it represents the scope and importance of the industry and lets them investigate and compare the latest technology, trends and techniques available.

The Pacific Agriculture Show features many important industry meetings including the long running Dairy Expo and the Horticulture Growers' Short Course. These and the various industry conferences that take place at the show attract the type of high quality delegates that exhibitors want to talk to.



The Ministry of Agriculture booth was represented by staff from the following branches: Plant and Animal Health, Innovation and Adaptation Services, Sector Development, Food Safety and Inspection, and Business Risk Management.

Dairy Section at the AHC

Under the *BC Milk Industry Act*, dairy farms are inspected and dairy farmers are required to provide facilities that ensure safe and clean milk production and handling. They must also provide adequate housing and waste handling facilities. The BC Government oversees farm inspection, raw milk handling and milk testing and is also responsible for dairy plant and final product evaluation.

Roger Pannett has over 33 years of service with the BC Ministry of Agriculture as the Provincial Dairy Technologist.



Roger provides technical and advisory services to the dairy industry, completing inspections to ensure compliance of licensed dairy farms and milk tankers with the *BC Milk Industry Act* and Milk Industry Standards

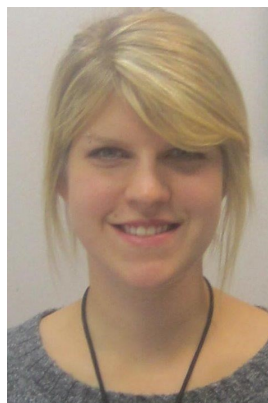
Regulation. Consequently, Roger works and travels throughout the Province, also completing day and night Bulk Tank Milk Grader (BTMG) Field Exams, plus coordinates the BTMG Organoleptic Milk Grading exams.

Roger also supports on-farm food safety programs requiring investigations and targeted milk sampling. National Mastitis Council (NMC) Static and Dynamic Milking Equipment Test results, plus Milking Equipment and Bulk Tank Wash Analysis reports submitted by BC Milking Equipment Dealers are closely monitored to ensure compliance. Consumers can be assured they are receiving high quality, safe and nutritious Canadian dairy products.



Lynette Hare has 34 years of service with the BC Ministry of Agriculture as the Operations, Compliance and Data Officer.

Lynette is responsible for the administration of the raw milk grading program, farm licensing and the Bulk Tank Milk Grader licensing and exams.



Erin Cuthbert is a Provincial Dairy Specialist. She has been in this position for almost 2 years. Currently, she is on 1 year educational leave in Scotland.

Erin will return to her base position in September 2019.

Tamara Pottrick is our newest member to the Dairy team.

Tamara joined the Ministry of Agriculture in a one-year position as a Dairy Inspector last September.

Travelling throughout the province, she completes most of the unannounced routine inspections for BC's licensed dairy farms to enforce the *Milk Industry Act* and Milk Industry Standards Regulation.



Tamara liaises with other industry stakeholders such as the BC Milk Marketing Board and BC Dairy Association to meet mutual goals, including excellent animal health and welfare management, and safe, high quality milk production on BC's dairy farms.

British Columbia ranks first in Canada for the highest provincial herd, milk quality and average milk production according to annual national summaries and milk quality statistics.

Most of the BC dairy herds are located in the Lower Mainland, southeastern Vancouver Island, and north Okanagan-Shuswap area.

Investigation of an Abortion Storm at a Cow-Calf Facility in the BC Interior by Dr. Stephen Raverty

In late November 2018, 5 of a 500 Angus beef cow herd aborted over a 2-3 day span with foul smelling discharge noted from the birth canal and thickened placentas. The fetuses ranged between 4-5 months gestation and primarily involved new first-time heifers and new introductions to the herd. The cows had been vaccinated in the fall and were maintained on a ration of grass and alfalfa hay. Within 8 days, an additional 6 cows aborted with similar clinical signs and gross pathology, and through December 12, 2018, 20 animals had aborted. By December 31, 2018, a total of 24 animals had aborted, and as of January 1, 2019, fetus losses appear to have subsided.

There were six case submissions, including two fresh placentas—one submission had three accompanying serum samples, three cases of individual aborted fetuses, and one submission consisting of two aborted fetuses. In one fetus, there was extensive scavenging with loss of the abdominal viscera. In two fetuses, the only significant gross findings were increased serosanguinous fluid within the thoracic and abdominal cavities; otherwise, there were no other apparent lesions. Tissues were processed for histopathology and ancillary diagnostic studies including aerobic culture, serology, polymerase chain reaction (PCR), radioimmuno-diffusion (RID) to quantify post mortem heart blood IgM titers and trace mineral analysis of livers.

Histopathology of both placentas featured widespread autolysis with superficial bacterial overgrowth with no associated inflammatory infiltrate. In one of the two cases, there was meconium interspersed within the chorioallantoic villi. Microbiology yielded heavy mixed growth of *Bacillus* spp, *Streptococcus* spp and *Streptococcus uberis* and *Escherichia coli* (*E. coli*), and the second case, there was heavy mixed *Streptococcus uberis* and *E. coli*. Serology of the three accompanying serum samples for one of these cases did not identify any titers to *Neospora caninum*.

In the initial two fetal submissions from mid-December, there was low-grade predominantly nonsuppurative epicarditis, myocarditis, myositis and cholangiohepatitis. Aerobic culture did not recover any bacteria in one case; there was mixed *Bacillus* sp and *Acinetobacter* sp from the placenta with no growth from the lung, and abomasal contents in the second. Based on the lack of associated inflammation, these bacteria were deemed contaminants. In both cases, there were no detectable IgM titers in post mortem heart blood by RID, and trace mineral analysis of the liver of one fetus identified reduced cobalt, copper and molybdenum. Analysis of the second fetal liver was not performed.

Necropsy of follow up submissions of a third fetus and two additional fetuses in late December did not identify any significant gross pathology. However, in addition to the non-suppurative multisystemic inflammatory infiltrate noted in the two prior submissions, there was disseminated necrotising hepatitis with intranuclear inclusions, syncytia and dystrophic mineral deposition. These lesions would have contributed significantly to the loss of these three fetuses.

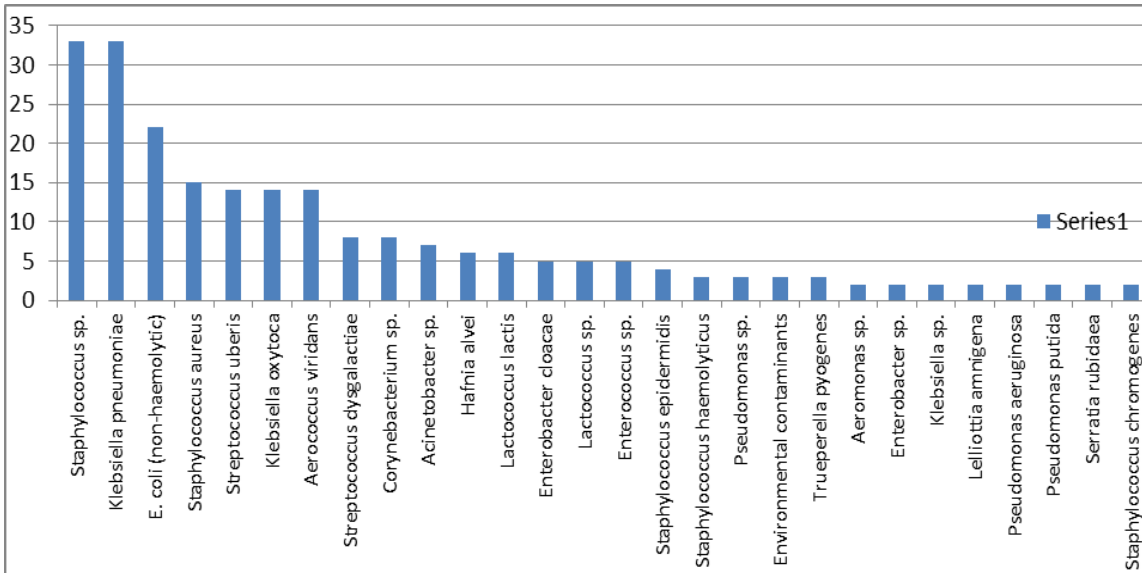
In aborted bovine fetuses, a prime consideration for hepatocellular necrosis and syncytia is bovine herpesvirus type 1 (BHV-1). Additional differentials for necrotising hepatitis may include infections with *Salmonella* spp, *Yersinia* spp, and *Listeria* spp, which were not recovered by culture. BHV-1 typically presents in fetuses from 5 months gestation onwards and there are no specific gross lesions. Placental edema, dark red serous fluid within body cavities, autolysis, and in sporadic cases, pale tan yellow foci throughout the liver parenchyma have been reported. Retrospective molecular screening of archived case material identified BHV-1 in both placentas and first fetal submission in mid-December 2018. In this case series, there was also a concern of vaccine induced abortion; however, the timeline between vaccination and high CT values from the PCR results indicate a wild type exposure, possibly with the recent introductions into the herd. Review of current vaccination strategies has been recommended and reassessment with next year's calving may prove valuable.



Photo of Angus Beef Cows—Courtesy of AGRI Image Library

Milk Culture Results by Dr. Jane Pritchard

January 1-December 31, 2018—Results of milk cultures sorted by frequency of isolation.



* The following isolates were single occurrences during the period of January 1-December 31, 2018, and not included in the chart above: *Acinetobacter johnsonii*, *Dermacoccus* sp., *E. coli* (haemolytic), *Empedobacter brevis*, *Enterobacter aerogenes*, *Enterococcus faecalis*, *Enterococcus saccharolyticus*, *Histophilus somni*, *Lactobacillus* sp., *Micrococcus* sp., *Moraxella* sp., *Myroides* sp., *Neisseria* sp., *Proteus* sp., *Serratia marcescens*, *Staphylococcus hominis*, *Staphylococcus sciuri*, *Staphylococcus simulans*, *Streptococcus lutetiensis*, and *Streptococcus pluranimalium*.

Between January 1 and December 31, 2018, 185 milk samples (52 submissions) were received for culture and sensitivity at the Plant and Animal Health Centre. Out of the 185 samples submitted, no bacteria was isolated in 25 samples.

Resistance by Isolate										
	amp	kf	ob	e	xnl	p10	pyr	sxt	tet	# of isolates tested
Staphylococcus sp.	21%	0%	36%	15%	3%	15%	24%	3%	24%	33
Klebsiella pneumoniae	67%	6%	67%	67%	9%	67%	67%	0%	3%	33
E. coli (non-haemolytic)	59%	32%	64%	64%	5%	64%	64%	9%	18%	22
Staphylococcus aureus	7%	0%	0%	13%	0%	13%	0%	0%	0%	15
Streptococcus uberis	0%	0%	93%	0%	0%	0%	29%	0%	86%	14
Klebsiella oxytoca	36%	7%	36%	36%	0%	36%	36%	0%	0%	14
Aerococcus viridans	0%	7%	57%	14%	0%	7%	29%	14%	43%	14
Streptococcus dysgalactiae	0%	0%	13%	13%	0%	0%	13%	13%	25%	8
Corynebacterium sp.	0%	0%	63%	38%	0%	0%	38%	50%	25%	8
Acinetobacter sp.	29%	43%	57%	43%	14%	43%	57%	14%	14%	7

amp - ampicillin	ob - cloxacillin	xnl - excenel	pyr - pirlimycin	sxt - sulfamethoxazole/trimethoprim
kf - cephalothin	e - erythromycin	p10 - penicillin	tet - tetracycline	

3-Year Comparison of Milk Culture and Sensitivity Results (Jan 1/16-Dec 31/18)

Between January 1 and December 31, 2018, 185 milk samples (52 submissions) were received for culture and sensitivity at the Plant and Animal Health Centre. Out of the 185 samples submitted, no bacteria was isolated in 25 samples.

Resistance by Isolate										
	amp	kf	ob	e	xnl	p10	pyr	sxt	tet	# of isolates tested
Staphylococcus sp.	21%	0%	36%	15%	3%	15%	24%	3%	24%	33
Klebsiella pneumoniae	67%	6%	67%	67%	9%	67%	67%	0%	3%	33
E. coli (non-haemolytic)	59%	32%	64%	64%	5%	64%	64%	9%	18%	22
Staphylococcus aureus	7%	0%	0%	13%	0%	13%	0%	0%	0%	15
Streptococcus uberis	0%	0%	93%	0%	0%	0%	29%	0%	86%	14
Klebsiella oxytoca	36%	7%	36%	36%	0%	36%	36%	0%	0%	14
Aerococcus viridans	0%	7%	57%	14%	0%	7%	29%	14%	43%	14
Streptococcus dysgalactiae	0%	0%	13%	13%	0%	0%	13%	13%	25%	8
Corynebacterium sp.	0%	0%	63%	38%	0%	0%	38%	50%	25%	8
Acinetobacter sp.	29%	43%	57%	43%	14%	43%	57%	14%	14%	7

Between January 1 and December 31, 2017, 269 milk samples (58 submissions) were received for culture and sensitivity at the Plant and Animal Health Centre. Out of the 269 samples submitted, no bacteria was isolated in 56 samples.

Resistance by Isolate										
	amp	kf	ob	e	xnl	p10	pyr	sxt	tet	# of isolates tested
Staphylococcus sp.	8%	2%	12%	4%	2%	9%	18%	2%	3%	90
Staphylococcus aureus	22%	3%	0%	0%	0%	24%	8%	0%	0%	37
Klebsiella sp.	73%	36%	68%	68%	18%	73%	68%	5%	9%	22
Aerococcus viridans	0%	0%	41%	0%	0%	0%	9%	23%	18%	22
Streptococcus uberis	0%	0%	60%	0%	0%	0%	20%	7%	33%	15

Between January 1 and December 31, 2016, 333 milk samples (87 submissions) were received for culture and sensitivity at the Plant and Animal Health Centre. Out of the 333 samples submitted, no bacteria was isolated in 73 samples.

Resistance by Isolate										
	amp	kf	ob	e	xnl	p10	pyr	sxt	tet	# of isolates tested
Staphylococcus sp.	9%	0%	7%	2%	0%	11%	13%	0%	5%	55
Staphylococcus aureus	5%	0%	0%	2%	0%	5%	2%	0%	9%	43
Streptococcus dysgalactiae	0%	0%	0%	0%	3%	0%	3%	3%	26%	31
Klebsiella sp.	89%	39%	94%	94%	28%	94%	94%	6%	17%	18
Corynebacterium sp.	13%	0%	33%	7%	0%	13%	27%	7%	0%	15
Aerococcus viridans	7%	7%	73%	7%	0%	7%	20%	40%	40%	15

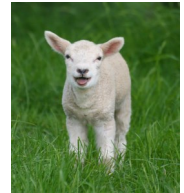
amp - ampicillin	ob - cloxacillin	xnl - excenel	pyr - pirlimycin	sxt - sulfamethoxazole/trimethoprim
kf - cephalothin	e - erythromycin	p10 - penicillin	tet - tetracycline	

Calendar of Events

“KEEPING YOUR SHEEP AND GOAT FLOCKS HEALTHY”

Sessions will focus on basic nutrition, biosecurity, and disease and parasite management related to small flock sheep and goat production. Planned locations: Kamloops (Feb 23), Burns Lake (Mar 9), and Haida Gwaii (May 2019).

For workshop details, please contact Glenna.McGregor@gov.bc.ca



“CANADIAN ANIMAL POLICY SYMPOSIUM” - March 1, 2019 in Victoria

The Symposium brings together provincial policymakers to share best practices in animal policy development. Agenda will also include discussions on current and future changes in the complex landscape of animal policy with legislative and scientific leaders from across Canada. For further info, please visit the following website: <https://spca.bc.ca/programs-services/leaders-in-our-field/national-welfare-work-for-animals/canadian-animal-policy-symposium>



“NATIONAL ANIMAL WELFARE CONFERENCE” - April 14-15, 2019 in Montreal

This two-day event takes place in a different major Canadian city each year and includes presentations, workshops, keynote addresses and panel discussions on new animal welfare initiatives, emerging animal welfare research, best practices in animal sheltering, leadership practices in an animal welfare context, animal welfare community engagement, advocacy and stakeholder relations techniques. In 2019, there will be more content on animal sheltering, humane education and leadership best practices than ever before. For further workshop details, visit: <https://conference.humanecanada.ca/>



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<http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/animals-and-crops/animal-health/animal-health-centre/newsletter>

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