

2018

REPORT

BOVINE NETWORK



By Dr. Luc Bergeron, Veterinarian, Department of Animal Health, Quebec Ministry of Agriculture Fisheries and Food

Support for translation provided through the AgriAssurance Program under the Canadian Agricultural Partnership, a federal-provincial-territorial initiative.

Key Facts

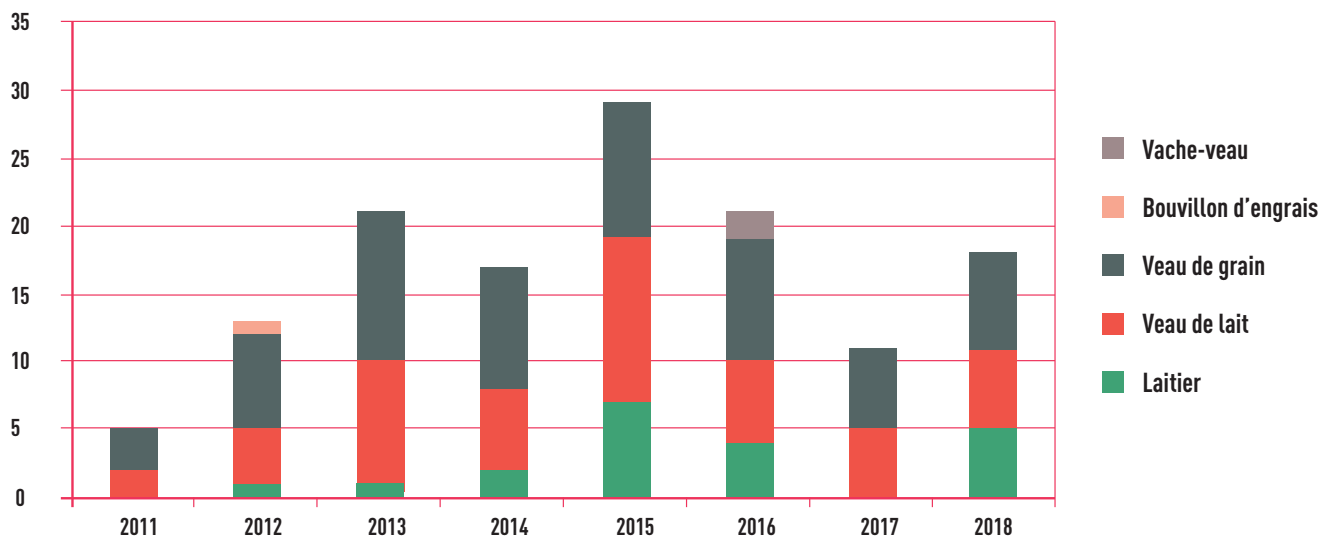
Salmonella Dublin Infection

In 2018, clinical cases of *Salmonella* Dublin infection were confirmed in 18 herds, specifically 5 dairy herds, 6 herds of milk-fed veal and 7 herds of grain-fed veal (figure 1). For the first time in Québec, a clinical case was confirmed in an adult animal. Seropositive animals were often detected in dairy farms following screening, without any clinical signs in the herd.

A voluntary awareness and prevention campaign focused on biosecurity and *Salmonella* Dublin was launched in October 2017 and continued in 2018 as part of Quebec Integrated Animal Health Program. As of May 27, 2019, 3,489 dairy herds in Québec have been visited. More information on this can be found on the following webpage: <https://www.mapaq.gouv.qc.ca/fr/Productions/md/programmesliste/santeanimale/PISAQ/Pages/Campagne-3.aspx>.

Figure 1

Number of farms with cases of *Salmonella* Dublin confirmed by a bacterial culture in MAPAQ's laboratory or declared* by other laboratories between 2011 and 2018, according to the type of herd.



* From April 30, 2015, the start date of the Regulation to designate contagious or parasitic diseases, infectious agents and syndromes.



Anaplasmosis

On April 17, 2018, the Quebec Ministry of Agriculture Fisheries and Food (MAPAQ) was informed of a suspected case of Anaplasmosis in a dairy herd in the Montérégie region. The animal in question was a three-year-old dairy cow. It had been purchased in the United States and transported directly to the farm in March 2018. It presented with signs of anemia and fever. Serology was positive, and a PCR analysis confirmed the case. Following this confirmation, the farmer returned the cow to its herd of origin in the United States. Following a detailed investigation with the practitioner and the farmer, MAPAQ decided that the risk of a spread within the herd was negligible. No additional screening analysis was recommended.

The last case of Anaplasmosis in Québec was detected in 2011 in the Abitibi-Témiscamingue region. Since April 1, 2014, Anaplasmosis has been withdrawn from the Canadian Food Inspection Agency (CFIA) list of mandatory reportable diseases. Thus, the CFIA no longer monitors this disease to verify Canada's status, no longer offers diagnostic analyses in its laboratories and no longer intervenes in cases of Anaplasmosis. Anaplasmosis is still immediately reportable by laboratories to the CFIA and to MAPAQ. It is spread primarily by tick bites, stinging insects and instruments

contaminated with blood, like needles and dehorning instruments. Since this disease is endemic in the United States, screening analyses as part of animal importation should be considered.

Leptospirosis

In February 2018, a practitioner contacted the Bovine Network to report the presence of pink-coloured milk from three cows in a dairy herd in the Centre-du-Québec region. A dozen cows had presented the same problem about a month earlier. In the majority of cases, the four teats were affected and fever had been noted. Hematuria was also observed in some cows. A few days after the onset of the first episode, serological testing for *Leptospira* was done and was negative. Subsequent paired serology tests on two of the cows from the first episode confirmed a *Leptospira pomona* infection. Titres of 12,000 and 800 were found- the threshold for confirmation of an active infection is 400. A treatment of tetracycline was administered and it was effective. Recommendations aimed at protecting public health were given to the farmer, such as the wearing gloves and coveralls when handling infected animals and avoiding contact with urine. Recommendations targeting prevention and control were also formulated, such as the application of a set of actions that limit the risk of environmental contamination by urine, including that of wild animals. Vaccination was also recommended in order to limit the risk of infection.

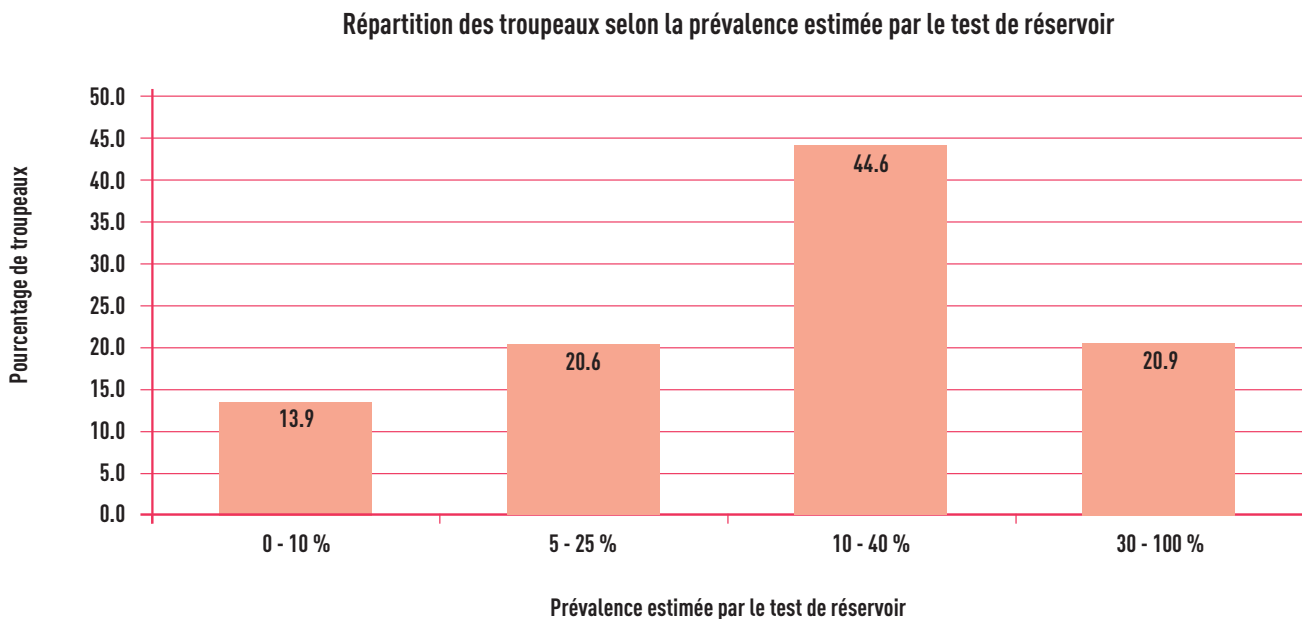
Although rare, the *pomona* and *icterohemorrhagiae* serotypes can cause an acute severe illness, particularly in young animals, with clinical signs that can include fever, hemolytic anemia, hemoglobinuria, jaundice, pulmonary congestion and sometimes meningitis and death. The condition is less severe in adult cows and is generally associated with fever, a reduction in milk production and the presence of hemoglobin in the milk.

Bovine Leukosis

As part of Dairy Farmers of Quebec animal-health action plan, all dairy farms in Québec underwent serological analyses of bulk tank milk to detect the presence of bovine leukosis. These analyses have allowed estimates to be made of the status of each farm (figure 2). An awareness campaign on the importance of prevention and control of this disease is ongoing and practitioners will have a central role to play in it.

Figure 2

Distribution of Québec dairy herds, according to the intra-herd prevalence estimated with the help of serological analysis of bulk tank milk in 2018



Source : Dairy Farmers of Quebec.

Yersinia pseudotuberculosis Diarrhea

A case of *Yersinia pseudotuberculosis* diarrhea was diagnosed in a dairy herd. Six cows in this herd were affected, with two deaths. Signs included profuse hemorrhagic diarrhea and a major drop in milk production. The isolated strain had developed a multi-resistance to antibiotics. Yersiniosis, caused by *Yersinia enterocolitica* or *Yersinia pseudotuberculosis*, is a zoonotic infection that manifests itself in humans with diarrhea, fever and abdominal distress. It is sometimes confused with appendicitis.

In bovines, the infection is generally asymptomatic, but can cause diarrhea. Clinical problems are more common in animals with poor immunity. Abortions caused by *Yersinia pseudotuberculosis* have also been reported. For more information on the subject of this disease: <https://www.mapaq.gouv.qc.ca/fr/Productions/santeanimale/maladies/transmissibles-humain/Pages/yersiniose.aspx>.

Helcococcus ovis Mastitis

A practitioner reported cases of grade 3 mastitis caused by *Helcococcus ovis* in three dairy cows from three different herds. For all the affected cows, losses of a quarter were observed, and they had to be euthanized or culled. For two of the three cows, the bacteria was isolated in pure culture. This pathogen seems to be emerging in bovines. Cases of mastitis, endocarditis, metritis and abortion have recently been reported in the literature in different regions of the world. This bacteria was isolated for the first time in 1999, from a sheep.

Asian Longhorned Tick in the United States

The presence of the Asian longhorned tick (*Haemaphysalis longicornis*) has recently been reported in North America. Until today, this species of tick was found in certain Asian countries, in New Zealand and in Australia. In 2018, the presence of this parasite was detected in a number of American states including several Northeastern states. The Asian longhorned tick represents a double threat for farm and wild animals. Firstly, they can infest the animals in such large numbers that they weaken them, which can lead to exsanguination and death. In addition, it is a known or presumed vector for various pathogen agents, notably *Anaplasma*.

Bovine Tuberculosis in British Columbia

On November 9, 2018, the CFIA announced the confirmation of a case of bovine tuberculosis in a cow-calf herd in British Columbia. The discovery of this case should not affect Canada's status with the World Organization for Animal Health (OIE) as a country free of bovine tuberculosis. For more information on the subject: <http://inspection.gc.ca/animaux/animaux-terrestres/maladies/declaration-obligatoire/tuberculose-bovine/enquete-colombie-britannique/fra/1544220226249/1544220226495#a1>.

Zoonotic Agents

In 2018, 29 cases of *Salmonella* (other than Dublin) and 12 cases of *Listeria monocytogenes* infection were confirmed or reported in bovine dairy herds. In all cases, MAPAQ opened an investigation and the veterinary practitioner informed the farmer of

recommendations aimed at protecting public health. In each case, a milk sample was taken from the tank to ensure that the pathogenic agent was not present. A culture from the tank milk was positive for *Listeria* in two cases. Milk from the affected herds was sent through a pasteurization system.

Animal Health Visits in the Cow-Calf Sector

As part of Québec Integrated Animal Health Program for the cow-calf sector, an awareness campaign was launched in November 2018. Optimization of animal immune resistance was the theme and will be addressed from two principal angles – the management of colostrum and vaccination. As of March 15, 2019, animal health visits have been made in 306 cow-calf herds. For further information please consult the following webpage: <https://www.mapaq.gouv.qc.ca/fr/Productions/md/programmesliste/santeanimale/PISAQ/Pages/PISAQ-Campagne-4.aspx>.



Monitoring Programme

National surveillance Program for Bovine Spongiform Encephalopathy

Since 1996, MAPAQ has participated in the national surveillance program for bovine spongiform encephalopathy. It should be noted that since 2007 Canada has been recognized by OIE as a controlled-risk country for this disease. For this category of risk, the requirements are similar to those for a country with negligible risk, however Canada continues to work towards lowering its risk level.

The last case of BSE detected in Canada in 2015 and it involved a cow born in 2009. Canada cannot obtain the status of a negligible-risk country before 2020, which is to say 11 years after the date of birth of the animal constituting the most recent case. In 2018, a total of 30,949 screening tests were carried out in Canada of which 10,137 were in Québec (Table 1). All results were negative.

Table 1

Screening results for the national surveillance program for bovine spongiform encephalopathy for the years 2016 to 2018

	Québec		Canada	
	Positive	Negative	Positive	Negative
2018	0	10 137	0	30 949
2017	0	7 736	0	29 845
2016	0	7 170	0	27 346



Other Surveillance Data

Necropsies and Biopsies

Table 2

Diagnoses of Interest from MAPAQ's Laboratory Following a Necropsy or Biopsy in Dairy Cattle for the Years 2016 to 2018

	2018	2017	2016
Total number of submissions	481	435	377
Respiratory problems			
Infectious bovine rhinotracheitis	2	1	2
Respiratory syncytial virus pneumonia	9	7	11
Para influenza virus type 3 pneumonia	0	0	0
Pasteurellosis: <i>Mannheimia haemolytica</i>	42	26	18
Pasteurellosis: <i>Pasteurella multocida</i>	11	18	9
Digestive problems			
Bovine viral diarrhea	3	2	2
Neonatal diarrhea	89	82	43
Coronavirus	19	20	14
<i>Cryptosporidium</i>	13	20	9
<i>Escherichia coli</i>	22	15	8
Rotavirus	25	26	12
Giardiasis	7	4	4
Salmonellosis	5	2	7
Other problems			
Abortions	124	138	118
<i>Mycoplasma bovis</i> infections	30	42	14
<i>Histophilus somni</i> infections	3	15	8
Lymphosarcoma	12	11	11
<i>Clostridium</i> infections	6	0	6
Malignant catarrhal fever	0	0	1
Total number of diagnoses*	822	753	597

* The totals take into account diagnoses that are not detailed in the table.

Table 3

Diagnoses of Interest from MAPAQ's Laboratory following a Necropsy or Biopsy in Cow-Calf for the Years 2016 to 2018

	2018	2017	2016
Total number of submissions	125	140	108
Respiratory problems			
Infectious bovine rhinotracheitis	2	5	1
Respiratory syncytial virus pneumonia	4	0	4
Para influenza virus type 3 pneumonia	2	0	0
Pasteurellosis: <i>Mannheimia haemolytica</i>	11	8	9
Pasteurellosis: <i>Pasteurella multocida</i>	5	2	5
Digestive problems			
Bovine viral diarrhea	1	2	1
Neonatal diarrhea	25	20	21
Coronavirus	7	6	7
<i>Cryptosporidium</i>	6	4	4
<i>Escherichia coli</i>	3	4	2
Rotavirus	9	6	8
Giardiasis	2	0	0
Salmonellosis	4	5	3
Other problems			
Abortions	7	10	7
<i>Mycoplasma bovis</i> infections	10	15	9
<i>Histophilus somni</i> infections	6	7	2
Lymphosarcoma	1	0	1
<i>Clostridium</i> infections	5	3	4
Malignant catarrhal fever	0	0	1
Total number of diagnoses*	260	214	180

* The totals take into account diagnoses that are not detailed in the table.

Table 4

Diagnoses of Interest from MAPAQ's Laboratory following a Necropsy or Biopsy in Feedlots for the Years 2016 to 2018

	2018	2017	2016
Total number of submissions	22	20	15
Respiratory problems			
Infectious bovine rhinotracheitis	1	0	0
Respiratory syncytial virus pneumonia	5	1	0
Para influenza virus type 3 pneumonia	2	0	0
Pasteurellosis: <i>Mannheimia haemolytica</i>	1	5	2
Pasteurellosis: <i>Pasteurella multocida</i>	2	0	0
Digestive problems			
Bovine viral diarrhea	6	2	0
Giardiasis	0	0	0
Salmonellosis	0	0	0
Other problems			
<i>Mycoplasma bovis</i> infections	9	7	2
<i>Histophilus somni</i> infections	9	3	3
<i>Clostridium</i> infections	2	0	1
Malignant catarrhal fever	0	0	0
Total number of diagnoses*	65	48	20

* The totals take into account diagnoses that are not detailed in the table.



Table 5

Diagnoses of Interest from MAPAQ's Laboratory following a Necropsy or Biopsy in Grain-Fed and Milk-Fed Veals for the Years 2016 to 2018

	2018	2017	2016
Total number of submissions	78	91	63
Respiratory problems			
Infectious bovine rhinotracheitis	2	3	2
Respiratory syncytial virus pneumonia	6	10	2
Para influenza virus type 3 pneumonia	2	0	1
Pasteurellosis: <i>Mannheimia haemolytica</i>	12	9	9
Pasteurellosis: <i>Pasteurella multocida</i>	5	7	2
Digestive problems			
Bovine viral diarrhea	4	8	2
Neonatal diarrhea	29	57	25
Coronavirus	11	20	10
<i>Cryptosporidium</i>	7	15	5
<i>Escherichia coli</i>	4	2	2
Rotavirus	5	19	8
Giardiasis	1	2	2
Salmonellosis	22	32	24
Other problems			
<i>Mycoplasma bovis</i> infections	16	23	15
<i>Histophilus somni</i> infections	1	3	1
<i>Clostridium</i> infections	0	1	0
Total number of diagnoses*	159	226	127

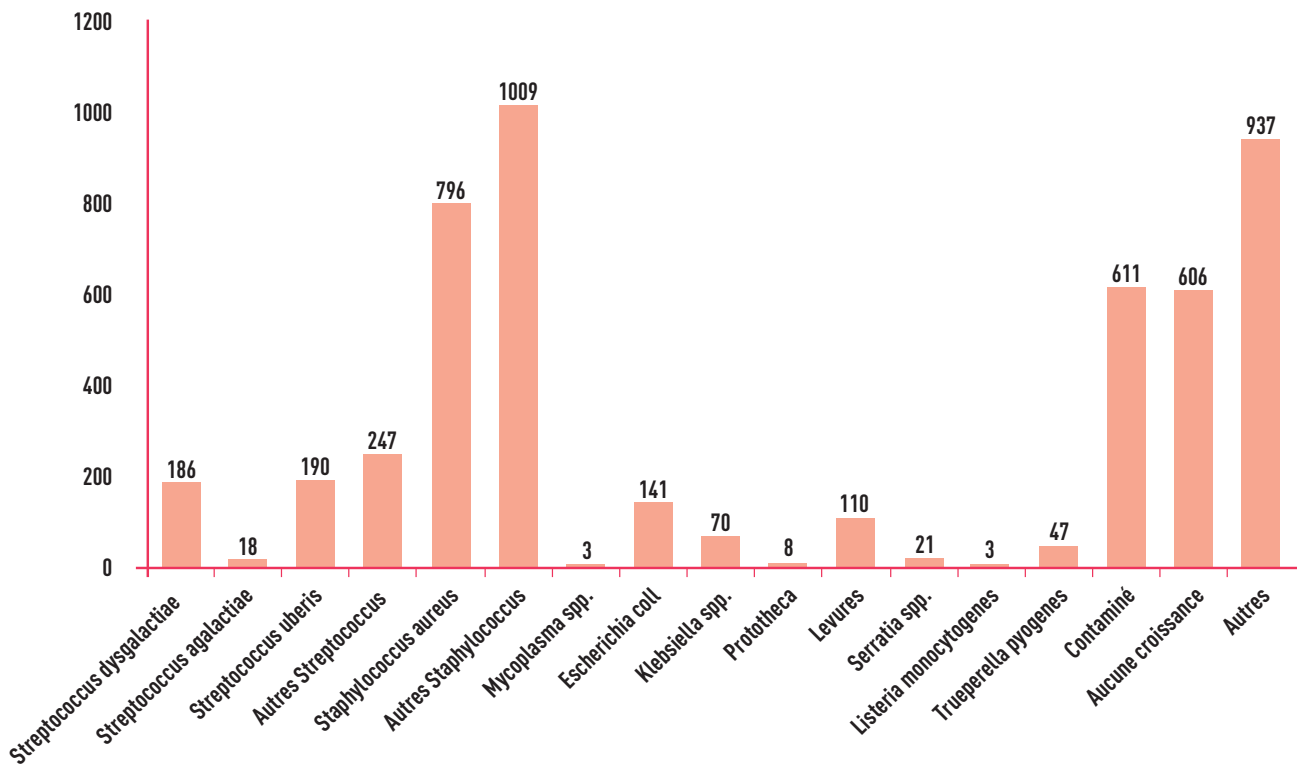
* The totals take into account diagnoses that are not detailed in the table.

Results of Milk Cultures

In 2018, some 3,470 individual samples of milk were sent to MAPAQ's laboratory; they provided 5,003 results (figure 3).

Figure 3

Results from Individual Milk Samples Sent to the MAPAQ's* Laboratory in 2018 in Cattle.



* Only results that were obtained from individual milk samples sent to Québec's animal health laboratory are detailed in this figure.