

March 1, 2024

Biannual report on Influenza A in Ontario Swine herds: July to December 2023

Background Information on Influenza A in Swine

The purpose of this update is to provide information on influenza A in Ontario swine herds based on data collected from July 2023 to December 2023, though in some cases data from all of 2023 is reported for reference. Influenza A is an immediately notifiable hazard to the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) under the *Animal Health Act*, 2009. This report was created from data that was directly reported to OMAFRA and those received through the Animal Health Laboratory (AHL) in Guelph.

Influenza is a common virus that affects multiple animal species, including swine, birds, horses, and dogs. Additional general information on influenza and animal health can be found at [Animal health: Influenza | ontario.ca](https://www.ontario.ca/animal-health/influenza).

Influenza is a zoonotic disease and in rare cases influenza viruses from pigs can affect humans. There is no risk of contracting influenza from pork products that are properly handled and cooked. If a case of influenza virus from swine is identified in a person, OMAFRA will assist the Ontario Ministry of Health and the Public Health Agency of Canada with an investigation. People can help prevent transmission of influenza between animals and themselves by wearing gloves and an N-95 respirator mask, and by washing their hands after working with or handling animals. If you have questions about your health, please contact your physician.

Human influenza viruses can also be transmitted to pigs. If you are sick with a cold or flu, stay home and ask someone else to look after your animals.

Under the authority of the *Animal Health Act*, OMAFRA has a mandate to protect animal health and take appropriate action on animal diseases that may affect human health. Therefore, influenza in all animal species is designated as an immediately notifiable hazard which requires all veterinary laboratories in Ontario to notify OMAFRA when the virus is identified by a laboratory test.

Influenza virus in swine has various subtypes, including H1N1, H3N2 and H1N2. The H1N1 subtype was the predominant subtype detected until 2004 when H3N2 influenza was identified in Canadian pigs and spread to swine herds throughout all provinces including Ontario. The H1N2 influenza subtype was first identified in Ontario pigs in February of 2015

and since October of 2016 has become more common in Ontario swine herds. Some influenza strains can circulate and cause little or no signs of disease in pigs, while others cause coughing, fever, laboured breathing, muscle stiffness and abortion. In most cases, pigs infected with influenza viruses quickly become ill and recover, although severe cases can result in death. The virus can also make infected pigs more susceptible to infection with other bacteria and viruses.

Influenza A in Ontario Swine, July to December 2023

The information presented in this report is limited to the information provided at the time of the direct notification to OMAFRA and the information provided in the laboratory submission to the AHL. In cases where adequate information on herd production type was not available (i.e., when this information was not provided on the laboratory submission form), disease data is displayed under the category titled “swine, not specified” (see Figure 2 below). Isolations from all investigation types or submission purposes (e.g., monitoring, elimination) and clinical contexts (e.g., uncomplicated infections, co-infection with other respiratory pathogens) are included in this report and should be considered when interpreting the data.

From the data received for the reporting period, submissions with detections of influenza were found to fluctuate throughout. The peak number of positive submissions for this reporting period occurred in October 2023 where the number of positive submissions received was 21 (Figure 1). This is the second peak in positive submissions observed this year, with the first occurring in June 2023.

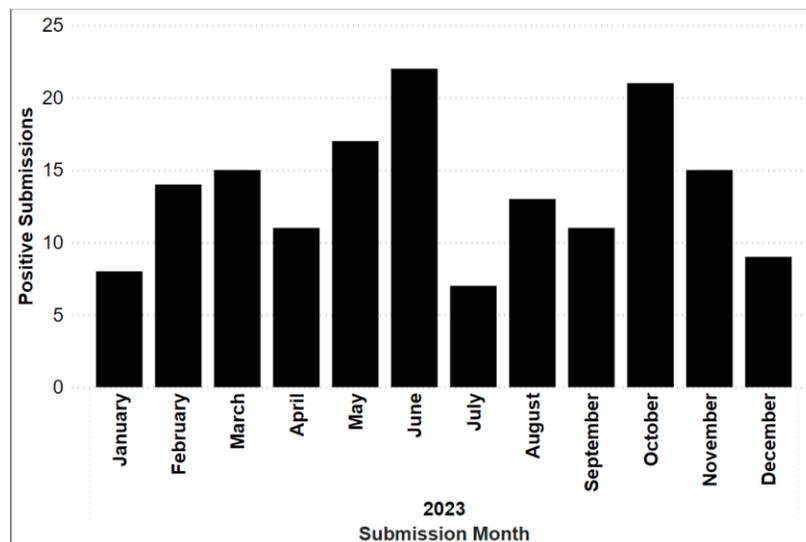


Figure 1. Submissions with positive tests (not including ELISA tests) for influenza in swine by submission month, Ontario, January 2023 to December 2023.

Most positive submissions were sent from nursery and grow-finish units across most

months (Figure 2) and all quarters (Figure 3) in 2023. In quarters 2 and 4 of 2023 there were also a number of positive submissions from sow herds (Figure 3).

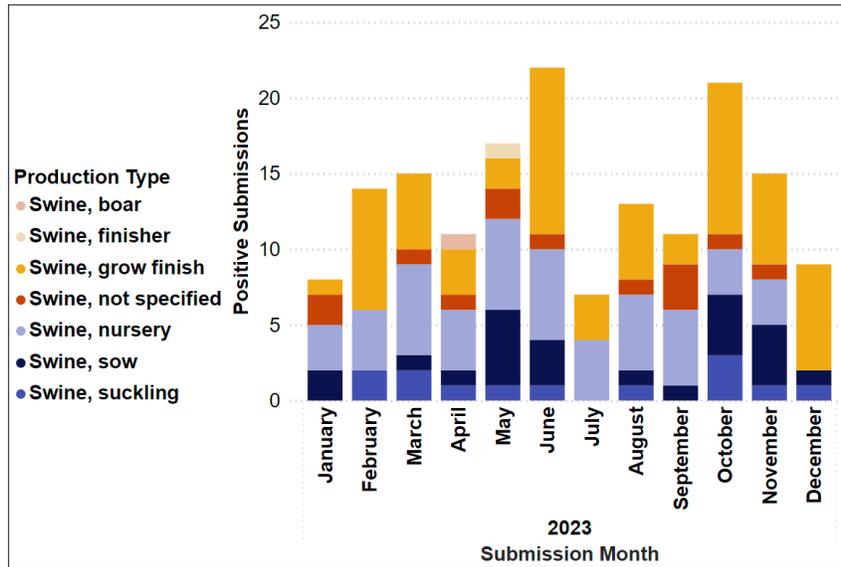


Figure 2. Number of submissions with positive tests (not including ELISA tests) for influenza in swine by production type and submission month, Ontario, January 2023 to December 2023.

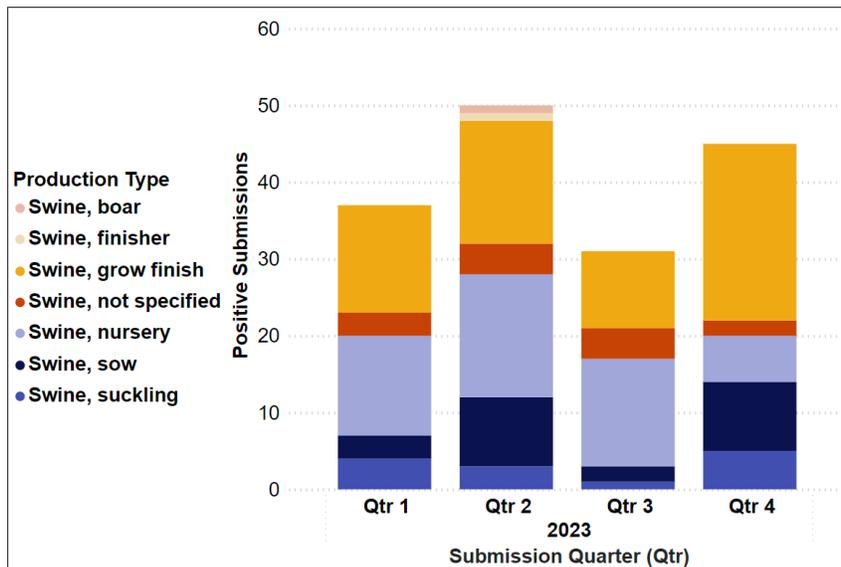


Figure 3. Number of submissions positive for influenza (excluding ELISA tests) in swine by production type and quarter, Ontario, January 2023 to December 2023. Quarter (Qtr) 1: Jan-Mar, Qtr 2: Apr-Jun, Qtr 3: Jul-Sept, Qtr 4: Oct-Dec.

Most positive submissions from July to December involved the subtype H3N2 (Figure 4). Since May 2023, H3N2 has been detected more than any other subtype combined for each month (Figure 4). Figure 4 also shows counts of partial, mixed, and “inconclusive” subtypes isolated from Ontario swine herds throughout the year 2023. A mixed subtype refers to a submission containing a combination of more than one H or N subtype, while a partial

subtype refers to submissions where only an H or N subtype is detected. Submissions where influenza was detected but subtyping could not be completed are captured in the “inconclusive” category. Submissions where subtyping could not be completed were most common in June relative to the other months during the year of 2023.

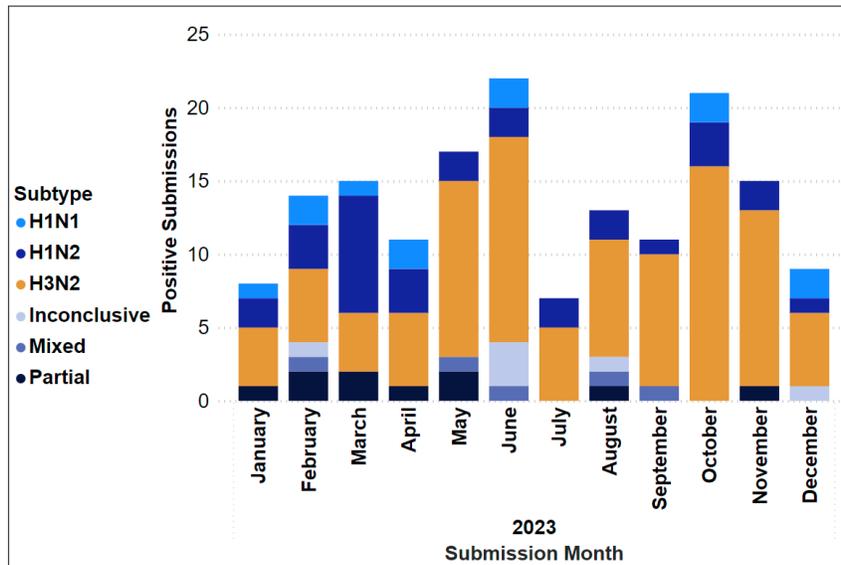


Figure 4. Submissions positive for influenza (not including ELISA tests) in swine by subtype and submission month, Ontario, January 2023 to December 2023.

The H3N2 subtype was the most detected subtype in three of the four quarters of 2023 (Figure 5). Submissions where subtype H3N2 was detected more than doubled from quarter 1 to quarter 2 of 2023 and remained the dominant influenza subtype detected throughout 2023 (Figure 5).

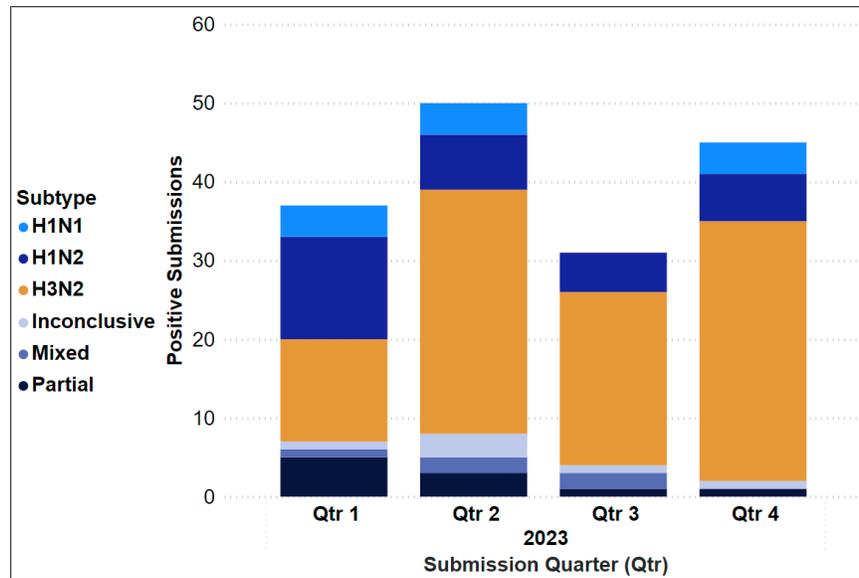


Figure 5. Submissions positive for influenza (not including ELISA tests) in swine by subtype and submission quarter (Qtr), Ontario January to December 2023: Qtr 1: Jan-Mar, Qtr 2: Apr-Jun, Qtr 3: Jul-Sept, Qtr 4: Oct-Dec.

Most influenza submissions in swine continue to come from the swine dense counties of Huron and Perth, followed by Middlesex, Oxford, and Bruce counties (Figure 6).

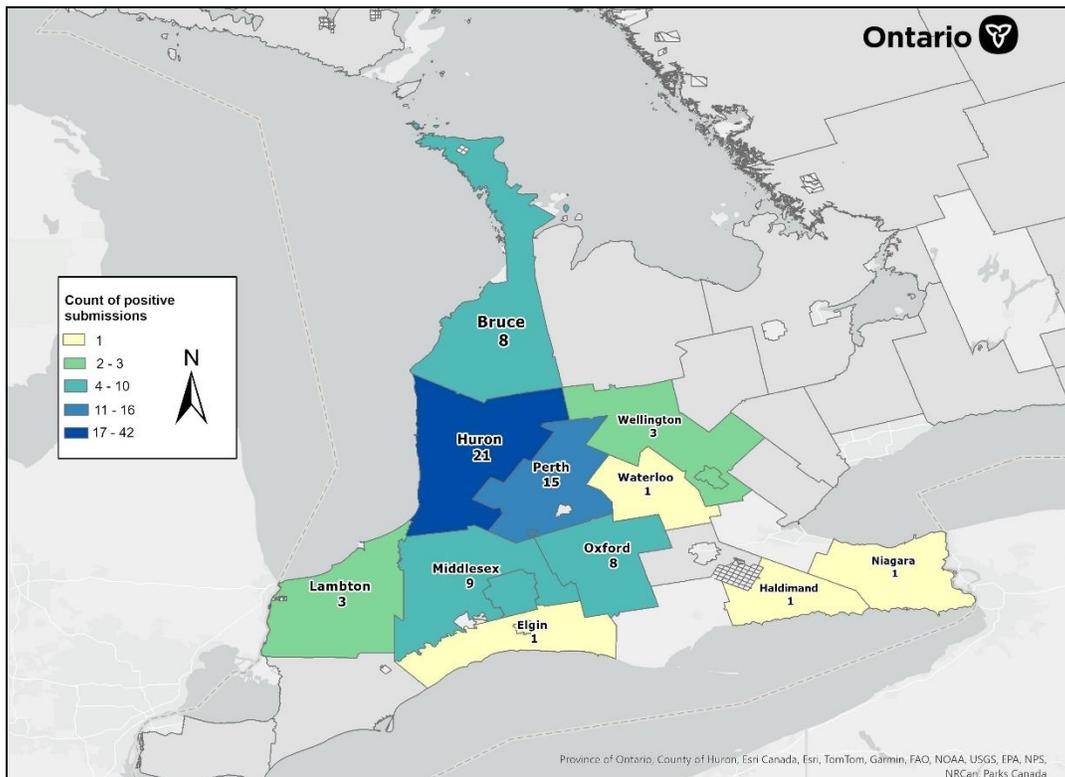


Figure 6. Submissions positive for influenza (not including ELISA tests) in swine by county, Ontario, July 2023 to December 2023. Of note, 5 positive submissions did not have location information available.

The majority of influenza detections during this report period belong to the 2010.1 clade of the H3N2 subtype (Figure 7), which was first isolated in Ontario swine in April 2023.

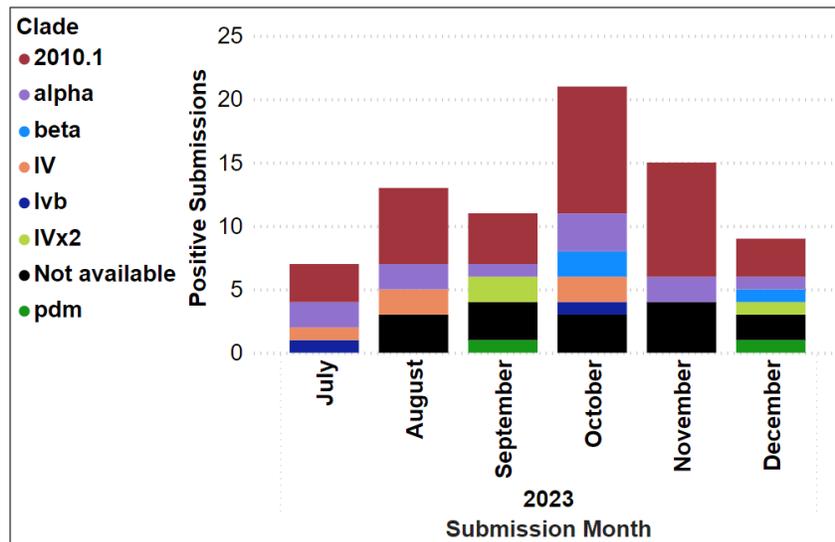


Figure 7. Submissions positive for influenza (not including ELISA tests) in swine by clade and submission month, Ontario, July 2023 to December 2023.

Take Home Messages

A notable finding of this report was the increased detection of subtype H3N2 from quarter 1 to quarter 2 of 2023, and its continued dominance through the remainder of the year (Figure 5). In April of 2023, the Animal Health Laboratory (AHL) in Guelph, identified a “new” clade of subtype H3N2 known as 2010.1 in Ontario pigs. More information on this finding and the origins of this virus was made available in the September AHL newsletter and can be accessed via the following [link](#).

There are no known detections of this new clade infecting humans to date, but the importance of following good biosecurity practices and using personal protective equipment when working with sick pigs, as well as the important practice of swine farm workers staying home if they may be sick with respiratory illness and/or are experiencing a fever must be emphasized. The goal is to prevent further virus transmission and the potential to infect other species. Your veterinarian can provide advice on how to prevent and manage influenza infections, including vaccination strategies, isolation for incoming animals, and good biosecurity measures.

Disease surveillance activities that include subtyping and genotyping of detections of Influenza A in swine are funded through the Ontario Agri-Food Innovation Alliance. This report showcases the importance of this funding which allows for the monitoring of genetic reassortments and mutations of this virus.