Highly Pathogenic Avian Influenza (HPAI) H5N1 Detected in California Dairies

- What Ranchers Need to Know

What happened? The California Department of Food and Agriculture (CDFA) announced in a press release on August 30th, 2024 that highly pathogenic avian influenza (HPAI) was detected in three dairies in the Central Valley. The outbreak of this flu virus in dairy cattle was first reported in the Texas panhandle in the spring of this year after several dairy herds had cows become sick with an unidentified illness. The affected cows were lethargic, had a fever, some had clear nasal discharge, diarrhea or dry feces, dropped in feed consumption and milk production, and most remarkably shed thick, colostrum-like milk. Most of the affected cows recovered after a couple of weeks, but their milk production did not reach the same levels as before they became ill. Veterinarians were unable to determine the cause of these outbreaks for some time, but dead birds on the dairies and cats with neurological signs finally raised the suspicion for avian flu. Cats and other mammals often become neurological when infected with HPAI and cats on dairies become infected when drinking raw milk. Samples collected from affected cows indeed came back positive for HPAI and since then, dairy herds in multiple states across the U.S. have tested positive for the virus. For a current and historical overview of affected states go to the United States Department of Agriculture (USDA) dashboard. As of October 23, 2024, a total of 14 states have diagnosed cases in 334 herds.

How did this virus get into dairy cattle? It is now believed that the virus spilled over from birds to dairy cattle in a single event, i.e. one cow was infected in Texas through bird droppings or a dead bird, and the virus has since spread from cow to cow only. Flu viruses change often, which is why we need a new flu vaccine in people every year. When a host such as a bird gets infected with two types of flu viruses at the same time, the viruses can reassort their genetic material. By random chance events, the newly assorted virus is now capable of infecting a new host, in this case cattle.

How has the virus spread between cattle so quickly? HPAI is shed in large numbers in the milk, even before cows show clinical signs of disease. It is very likely that the virus spreads between cows on a dairy through milking machines. The virus is also shed in small amounts in urine, nasal secretions, and saliva. In a study where dairy heifers were experimentally exposed to the virus via an inhalation mask, heifers only had a temporary increase in nasal discharge without any other clinical signs. However, the same researchers infected the udder of lactating cows experimentally through the teat canal and were able to reproduce the same disease symptoms seen on the affected dairies: abnormal milk, decreased feed intake, watery diarrhea or dry feces, a significant drop in milk production and clear nasal discharge. A preliminary version of this study is available online. Even though there are quarantines and movement restrictions in place for herds where HPAI is found, the rapid spread of the disease shows how interconnected the cattle industry is and how fast and far pathogens can travel. The virus has also been spread from cows to domestic poultry, which are susceptible to HPAI. When HPAI is found in domestic poultry, the typical outcome is that all birds are euthanized. For all these reasons, biosecurity is of utmost importance to curb the spread of HPAI among cattle and poultry.

Is there a risk to people? So far, several human cases of avian influenza have been reported in dairy workers in California. All have had mild symptoms and have recovered or are recovering. Humans luckily do not appear to be the main target species of this type of avian flu virus even when directly exposed to infected cows, but personal protective equipment (PPE) is highly recommended

for those working on dairies. Human safety is paramount, and the USDA offers financial support for affected premises to purchase PPE, such as gloves, goggles, and masks for farm workers. Early on, it was also determined that pasteurization inactivates HPAI virus, so the milk supply stays safe. The USDA is also confident that the meat supply is safe and will be adding H5N1 monitoring in dairy cows at slaughter to its program later in September. It is, however, not recommended for people to consume raw milk as milk appears to be the main vehicle for transmission and may not be safe to drink.

What happens now in California? The staff at the Animal Health branch at CDFA had been preparing for the moment when HPAI would be detected in a California dairy herd. Factsheets and regulations are posted on a dedicated website. Lactating dairy cattle moving interstate from California require a Certificate of Veterinary Inspection and a negative HPAI test within seven days of movement. All dairies are urged to increase their biosecurity including cleaning and disinfection of vehicles to transport cattle, restriction of worker movement between dairies and poultry facilities, limiting visitor access to premises, wild bird deterrence, etc. All lactating cattle shown at fairs must have a negative PCR test for the virus from a milk sample within seven days before arriving at the fair. Enhanced biosecurity for dairy cattle at fairs has also been outlined in a factsheet.

Is there a vaccine? There is no vaccine for cattle yet, but several pharmaceutical companies are working on the development of such vaccines. The USDA is also conducting research into a vaccine. If or when a vaccine for cattle will become available is still unknown today, but the flurry of activity is a promising sign.

What do beef ranchers need to consider? No beef cattle have been found to be infected with HPAI to date. Spread within a beef herd would likely be limited because cows aren't being milked. However, beef cows are likely not immune to the virus. Therefore, biosecurity should also be on ranchers' minds, especially for those who have contact with dairy cattle or domestic poultry. You do not want to become a fomite. The biosecurity training provided by the Beef Quality Assurance program is a good starting point to learn how to prevent spread between cattle or between cattle and poultry. Chapter 3 in the BQA manual is full of good information. For example, a trailer that is used to transport cattle from multiple herds should be thoroughly cleaned and disinfected between loads. Changing clothes and washing boots between visiting different herds should also be practiced. Limiting visitors to the ranch and keeping a visitor log is also encouraged. Raising dairy calves on beef cows is high risk and is not recommended at this time.

The avian influenza outbreak in California dairy cattle is a stark reminder of the unpredictable nature of viral diseases and their ability to cross species barriers. It is important to follow the science, listen to guidance from experts, understand that sometimes things change, and we need to adapt with the change. We have successfully overcome Covid19 – we will also get through avian flu in dairy cows. Keep checking the CDFA website to stay informed on the development of this new cattle disease.