7 JUNE 2024

TO
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Attention: [redacted]

Tel:
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FROM
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Section: Science, Technology, Environment and Resource
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TRIM Reference:

Avian influenza outbreaks in Victoria – follow up questions

Thank you for your follow up questions relating to the avian influenza outbreaks in Victoria, received on 5 June by email.

As confirmed in our subsequent discussion, we have agreed to provide information for 5 of the 11 questions and have requested information on your behalf from the relevant Commonwealth Government departments and agencies for the remaining 6 question.

This brief provides information on the following 5 questions:

1. With regards to bird flu, please provide the definition of a 'case'
2. Have the biosample sequences now been uploaded to GenBank?
3. Please provide the department name or contact who can provide information on the decision to cull the birds.
4. What is the hypothesised point/species of geographical entry for the virus into Australia, and what evidence supports this hypothesis?

5. Were any licenses for crop spraying over the area of the three farms issued in the last 4 weeks? If so, to whom were they issued?

We have agreed to provide this information by 7 June 2024.

Information regarding the following 6 questions has been requested from CSIRO, the Commonwealth Department of Agriculture, Forestry and Fisheries (DAFF) and Agriculture Victoria:

1. How many individual animals have been tested at each of the three sites (ie Terang, Meredith and Lethbridge)?
2. How many chickens at each site were found to have tested positive?
3. How many individual cases of each H7N9 and H7N3 were found at each site?
4. How many deaths (due to infection, not cull) have been recorded at each site?
5. If PCR was the primary testing modality, is it yet known at what Ct value were the tests performed or claimed to be positive at?
6. Were any experiments being conducted using live H5N1, H7N9 or H7N3 influenza, or clones of these 3 strains of influenza, at the CSIRO during 2021-2024. If so, please list the primary investigators of these experiments.

The CSIRO has provided the following information:

> **Questions 1-4:** Confirming these are questions best directed to Agriculture Victoria as CSIRO does not have this information.
>
> **Question 5. What Ct value are the tests performed considered to be positive at?**
>
> Ct values for realtime PCR assays have to be interpreted in the context of the test system for which they have been validated and do not provide an absolute comparator outside of that context. The assays used by CSIRO's Australian Centre for Disease Preparedness, which are validated as a part of our ISO 17025 accredited quality system, are considered to be positive for a Ct value of 40 or below, negative for a Ct value above 45 and indeterminate between these values. Other laboratories will however establish their own cutoff values in accordance with their own accreditation systems.
>
> **Question 6. Were any experiments being conducted using live H5N1, H7N9 or H7N3 influenza, or clones of these 3 strains of influenza, at the CSIRO during 2021–24.**
>
> As part of its role as Australia's national reference laboratory and as a World Organisation for Animal Health (WOAH) reference laboratory for avian influenza, CSIRO conducts research at its Australian Centre for Disease Preparedness to understand, prepare for and protect Australia against avian influenza outbreaks.
>
> During the relevant time period, CSIRO staff working in high biocontainment conditions and to strict regulatory measures conducted live virus experimental work with a range of H5N1 subtypes to improve our understanding of the virus. No experiments were done with live H7N3 or H7N9 viruses.

The DAFF referred us to Agriculture Victoria for information concerning these questions, and Agriculture Victoria has confirmed that the information needed to respond to these questions is at

a higher level of detail than it is currently providing. It noted that the most up-to-date information is provided on its 'Avian influenza (bird flu)'.

Caveat

While every effort has been taken to prepare an accurate and concise brief, it may not be fully comprehensive in the time available. If you would like additional detailed information, please let me know.

This brief follows the earlier brief relating to avian influenza (provided 29 May 2024).

1. With regards to bird flu, please provide the definition of a 'case'

The World Organisation for Animal Health (WOAH) online Terrestrial Animal Health Code defines a case as 'an individual *animal* infected by a pathogenic agent, with or without clinical signs'.

The latest version (5.2) of the national *AUSVETPLAN response strategy for avian influenza*, (which is currently still a working draft) provides a definition of case for avian influenza (AI) on page 45:

> For the purpose of this manual, a case of AI is defined as laboratory-confirmed infection with AI virus in a susceptible animal with or without clinical signs.
>
> **Notes:**
>
> - Positive serology in the absence of detection of AI [avian influenza] virus, with no clinical or epidemiological evidence supporting infection, does not constitute a definition of a case.
> - AUSVETPLAN case definitions guide when a response to an EAD [emergency animal disease] incident should be undertaken. AUSVETPLAN case definitions do not determine when international reporting of an EAD incident is required.
> - At the time of an outbreak, revised or subsequent case definitions may be developed with the agreement of the CCEAD [Consultative Committee on Emergency Animal Diseases].

2. Have the biosample sequences now been uploaded to GenBank?

The search functions provided for GenBank database are complicated, and, in the time available, we have not been able to undertake a detailed search to determine if the sequences have been uploaded.

However, we did conduct a search of the National Center for Biotechnology Information (NCBI) Virus Database, which includes data from International Nucleotide Sequence Database Collaboration (INSDC) databases, including partial and complete viral nucleotide sequences uploaded to GenBank.

We searched using the following filters:

- virus: influenza A virus
- subtypes: H7N3 or H7N9
- geographical region: Australia.

The search results indicated that the sequences from the most recent outbreaks in Victoria have yet to be uploaded. The latest release date for the sequences found by the search we conducted was 3 March 2022.

3. Please provide the department name or contact who can provide information on the decision to cull the birds.

Agriculture Victoria is part of the Victorian Government's Department of Energy, Environment and Climate Action (DEECA) and is responsible for regulating biosecurity threats and emergencies in the state. It is likely to be the best contact for this information. Contact information is provided on the 'Contact us' webpage.

We note that it is national policy to control an outbreak of highly pathogenic avian influenza (HPAI) and low pathogenicity avian influenza (LPAI) H5 and H7 subtypes (H5/H7) by culling 'affected birds and all susceptible birds' on infected premises, 'unless the spread or likely spread of infection indicates that stamping out alone will not achieve eradication' (p. 49).[1]

The powers to order a cull of livestock in Victoria are provided under the Victorian *Livestock Disease Control Act 1994* (see sections 14 and 15 on pp. 32–34).[2] We also note that under the Act, the Victorian Minister for Agriculture can issue orders declaring areas to be 'restricted' or 'controlled' and can 'specify any prohibitions, restrictions and requirements which are to operate' in those areas, provided the minister believes or suspects that:

- for restricted areas – 'there is a possibility that an exotic disease is present on or in or may be introduced' into an area the Minister can declare it a 'restricted area' (s. 26, pp. 46–47).
- for controlled areas – 'it is reasonably necessary for the purpose of preventing, controlling or eradicating an exotic disease' (section 29, pp. 50–52).

The power to issue these orders can also be delegated to the DEECA Secretary 'or any other executive within the meaning of the *Public Administration Act 2004* employed in the administration of this Act' (s. 102(2) p. 132). Under section 6(1) of the Act, the Governor in Council may also 'make any Orders that are required for the purposes of this Act' (p. 9).

4. What is the hypothesised point/species of geographical entry for the virus into Australia, and what evidence supports this hypothesis?

According to Animal Health Australia's 'Avian Influenza' webpage:

> Influenza A viruses have been isolated from most major bird orders — to date, at least 485 bird species, of which 258 are newly-affected since 2021 have been reported. Experimentally, AI virus can infect almost all commercial, domestic and wild avian species. Humans are susceptible to infection with influenza A viruses.

1. The *AUSVETPLAN response strategy for avian influenza* uses the term 'stamping out' as opposed to 'culling', however, it defines stamping out as: 'The strategy of eliminating infection from premises through the destruction of animals in accordance with the particular AUSVETPLAN manual, and in a manner that permits appropriate disposal of carcasses and decontamination of the site' (p. 112); The term 'infected premises' is defined as: 'A defined area (which may be all or part of a property) on which animals meeting the case definition are or were present, or the causative agent of the emergency animal disease is present, or there is a reasonable suspicion that either is present, and that the relevant chief veterinary officer or their delegate has declared to be an infected premises' (p. 109).
2. The Act (section 3) defines 'livestock' as 'any non-human animal, and any fish or bird, whether wild or domesticated, egg intended for hatching or bee'.

> AI viruses are widely distributed throughout the world, and outbreaks have occurred in Australia. Wild birds in Australia actively carry and shed LPAI virus without suffering noticeable clinical signs. **All Australian outbreaks to date have arisen from endemic LPAI H7 viruses which evolved to acquire high pathogenicity**. [Emphasis added]

The *Avian influenza in wild birds in Australia factsheet* (updated May 2024) also provides the following information (p. 3):

> In Australian poultry enterprises, nine outbreaks of HPAI H7 strains occurred between 1976 and 2024. HPAI has never been detected in Australian wild birds, other than one detection of HPAI H7 in a feral Eurasian starling (Sterna vulgaris) trapped inside an affected poultry shed during a 1985 HPAI outbreak. [See the fact sheet for references]

Section 2.4.2 of the national *AUSVETPLAN response strategy for avian influenza* provides the following further information (p. 20):

> The principal means by which AI viruses initiate outbreaks is thought to be via wild birds contaminating poultry water or food supplies and directly contaminating free-range farms with faeces. The infection then spreads through the movements of infected live birds or faecally contaminated eggs, feed, equipment, vehicles, materials, clothing and footwear. Infected backyard poultry and live bird markets can be sources of AI virus for commercial poultry. In past outbreaks, dissemination of AI virus between flocks has been primarily attributed to poor biosecurity, involving:
>
> - movement of infected birds (including vaccinated birds)
> - live bird markets (movement of birds, unsold birds returning to farm, contaminated crates and vehicles)
> - human-associated movements, such as transporting food, personnel, equipment and vehicles out of premises that are contaminated with infected faeces or respiratory secretions
> - centralised egg handling facilities and equipment, particularly shared use of egg trays and fillers
> - depopulation activities that infect nearby properties (Henzler et al 2003)
> - use of dead bird pick-up or waste collection centres by people from different premises (McQuinston et al 2005).

You may also find the global distribution maps on the United Nations Food and Agriculture Organization's 'Global Avian Influenza Viruses with Zoonotic Potential situation update' webpage to be of interest.

5. Were any licenses for crop spraying over the area of the 3 farms issued in the last 4 weeks? If so, to whom were they issued?

This information does not appear to be publicly available. In the time available, we have been unable to investigate this topic further. We also included this question in our request to Agriculture Victoria; however, as noted above, they were unable to provide this information.

Feedback

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