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Avian influenza XXXVI

Detection of infected birds in a vaccinated population

It is prudent to monitor AI vaccinated flocks to assess the success of vaccination and to identify vaccinated flocks carrying infection, which can then be eliminated. The DIVA principle can be utilised here.

The most direct and accurate way to confirm HPAI virus infection in a vaccinated flock is by the detection of the virus in the vaccinated flock. Probably the simplest surveillance system is to place a non-vaccinated subpopulation (biosensor) in a flock and monitor it.

In HPAI infected areas mortality in these birds is often an early warning of seroconversion to HPAI but with LPAI infection this is not a consistent finding. Virological sampling of the biosensor population is not worth doing unless adequate and appropriate samples are taken.

A good example of this is the sampling of ill or dead birds in which there is typically oropharyngeal and/or cloacal excretion of high numbers of avian influenza virus. This has been very consistent in detecting both HPAI and LPHAI by using virus isolation, RRT-PCR or antigen detection by various antigen capture based ELISA methods.

If pre-clinical infected birds that only shed low levels of virus are sampled, methods which are very sensitive at viral detection are the only ones likely to be successful.

In 2007 and 2008 in Egypt virological surveillance was used to screen commercial (0.97 and 0.31%) and backyard flocks (30.0 and 5.2%). H5N1 HPAI is endemic in Egypt because of low national vaccine coverage and the use of poor antigenically matched vaccines.

Serological surveillance

Serological surveillance provides a historical perspective to infection in the flock. This is primarily used to assess the success, or otherwise, of vaccination in the flock but it can not be used to detect actively infected flocks.

No one serological surveillance system will work for all vaccines and all field situations.