International Poultry Production

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Avian influenza XXXIV

Vaccination strategies

The historical approach to vaccination was to use a ring strategy, which was the vaccination of livestock within a control or surveillance zone around an outbreak of disease. This is based on the principle of short distance movement of infected animals and fomites.

Ring vaccination has been proposed as an emergency approach for HPAI but this may not always be 100% effective because of the easy and long distance movement of poultry to and from live markets, especially in developing countries, where they are often moved in small crates on scooters or motorbikes.

Another approach is stressor vaccination within the HPAI outbreak zone for non-infected flocks. These flocks become more resistant to infection by AI and especially LPAI in infected flocks to induce consistent high immune status with the objective of stopping shedding and transmission of avian influenza virus. This latter use can have the advantage of stopping avian influenza spread within the farm or house, even on infected premises. This was shown to be the case in field experiments against H5N2 HPAI in Pennsylvania, USA in 1983 and against H5N1 HPAI in Hong Kong in 2002.

Another use of stressor vaccination is to place vaccinated flocks after depopulating a positive farm where there is still a risk of residual virus in the environment – as repopulating with vaccinated stock should lessen the chance of avian influenza resurgence.

Stressor vaccination has been used for LPAI control. In 2003-2005 H7N2 LPAI affected several large table egg farms in Connecticut, USA that contained multiple large laying houses. On this occasion the consistent high level of immunity allowed the safe production and marketing of the eggs. After 18 months all the vaccinated flocks had gone and no H7N2 LPAI was detected by surveillance.

If resources are limited, vaccination should be prioritised as follows:

- Poultry and other birds in high risk compartments.
- Rare, captive birds.
- Valuable genetic poultry breeding stock.
- Grandparent poultry breeding stock.
- Long lived stock, such as breeders and table egg flocks.
- Broilers.