Good practices for successful vaccination at the hatchery

Vaccination is one of the key steps in the hatching process. It is also a part of a good poultry management programme. Vaccination is a complementary tool for the industry to prevent the spread of disease and achieve optimum performance. It can also have a positive impact on human health as it reduces human contamination through food consumption.

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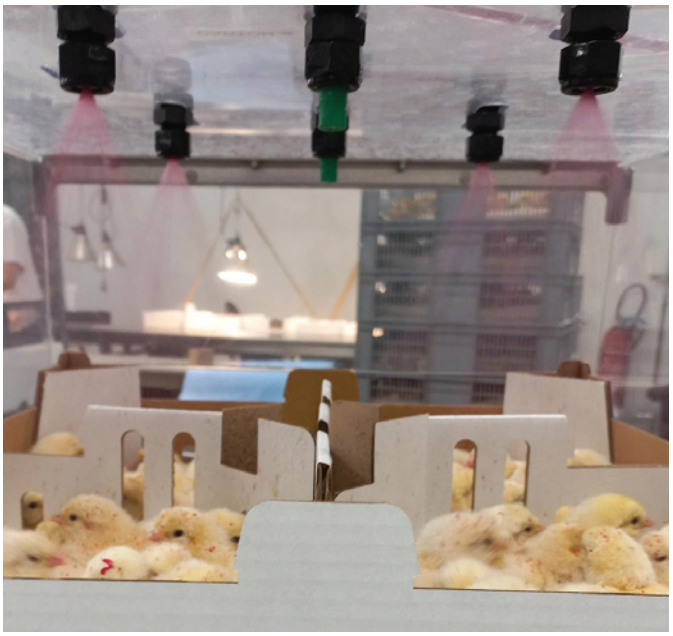
Vaccination should be an addition to good biosecurity and cleaning/disinfection practices during the entire production cycle (from hatching to producing eggs). Hatcheries must implement proper procedures to ensure that day-old chicks are correctly vaccinated to get the best protection against disease challenge.

Vaccines handling and storage

Vaccines and treatments should be stored in appropriate conditions, in suitable quantities considering the requirements and supply time. Vaccine efficiency might be reduced if the conditions of storage, according to suppliers' recommendations, are not applied.

Vaccines in liquid nitrogen.



Spray vaccination in the hatchery.

There are two ways that vaccines can be stored:
- In liquid nitrogen (-196°C) to keep the vaccine frozen, the level of nitrogen should be checked regularly to be sufficient in the containers. When working with liquid nitrogen, always wear the appropriate personal protective equipment.
- Storage in the fridge: temperature must be controlled regularly in case of doubts the vaccine should not be used.

Vaccine preparation

In the vaccination process, the preparation of the vaccine solution is key to ensure successful vaccination. Vaccines should be prepared in a dedicated area separated from the chick handling/vaccination rooms. This room should be clean and disinfected. Access to the room should be limited to the person in-charge of mixing the vaccine. A proper washing hand and disinfection should be done before any action.

It is therefore important to:
- Know and apply the essential hygiene rules to avoid contaminating the vaccine solution.
- Know the instructions for receiving and storing containers.
- Recognise non-compliant vaccine vials or diluent pockets:
  - Always check the colour of the diluent before use. Do not use diluent that appears yellowish or cloudy.
  - Check the vaccine in the vial. The vial must be stored head down in the containers. If the vaccine in the vial is not in the correct position, do not use the vial.
- Know and apply the safety rules and rules of use.
- Respect the different steps and the time required for preparation.

Preparation of frozen vaccines

Vaccine preparation is important to preserve the integrity of the vaccine, for frozen vaccines:
- Thawing of the vaccines should be in a limited time (90 seconds); otherwise the cryoprotective agent used to keep vaccine frozen will be toxic for the vaccine cells. That is why we recommend not to defrost too many vials at the same time.
- The temperature of the water bath should be well controlled with a target of 27°C.
- Vaccine vials should be dry before being opened.
- Aspirate the content of the ampoule slowly into a sterile syringe (at least 18-G not to damage vaccine cells).
- Inject slowly into the diluent bag to avoid any destruction of vaccine cells.
- Withdraw a portion of the diluent with the syringe to flush the vial.
- Mix well by gently swirling the bag.

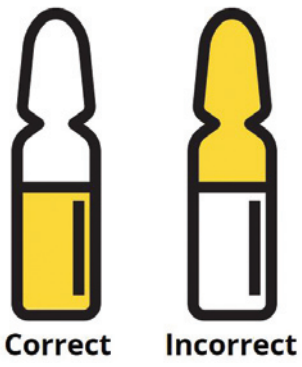
Registration of vaccine

It is important to record information on the vaccines used in the hatchery. This is to ensure the proper vaccine strains are used and track potential sources of problems.

The following information should be recorded:
- Type of vaccine used.
- Batch number and expiry date of the vaccines used.
- Nitrogen level and the fridge temperature.
- Time of vaccine preparation and time of the end of usage of each vaccine bottle.
- Number of ampoules or vials used, and number of chicks vaccinated.
- Name of operators preparing the vaccines.

Continued on page 13

Position of the vaccine in the vial.



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Vaccine administration

An operator responsible for vaccine installation/administration should handle vaccines after disinfecting their hands to reduce the risk of bacterial contamination.

Vaccination must be done by trained people using well-calibrated equipment.

Different methods for vaccine administration are available.

The vaccine preparation and administration must be chosen according to the vaccine and the suppliers' recommendations.

In ovo vaccine:
It is a modern vaccination method. In ovo vaccination is performed when the hatching eggs are transferred from the setter to the hatcher around 18 to 19 days.

The process and technique used to administer vaccines in ovo are critical as it must be made to very precise locations within the egg and with the highest hygiene levels possible.

If criteria such as good vaccine preparation, hatchery management, biosecurity are met, in ovo vaccination is an efficient method for vaccination.

Subcutaneous (SC) or intramuscular (IM) injection at day of hatching:
Day-old vaccination is generally accomplished by giving the vaccine subcutaneously under the skin at the back of the neck or intramuscularly in the leg.

It can be done with manual injector or automatic vaccination machines.

Some points must be checked before doing vaccination:

Basic vaccines applications		
Disease	Administration methods	Application periods
Marek	Intramuscular/subcutaneous/ in ovo	Day-old or before transfer in hatchers if in ovo
Newcastle Disease (ND)	Spray/subcutaneous/ Intramuscular/in ovo	Depending on the local epidemiological context/ Can be done from day old
Gumboro	Subcutaneous/in ovo	Depending on the local epidemiological context and/or quantity of antibodies of maternal origin
Infectious Bronchitis (IB)	Spray/subcutaneous/ intramuscular	Depending on the local epidemiological context, usually at day-old with regular boosters
Optional vaccines applications		
Disease	Administration methods	Application periods
Coccidiosis	Spray/drinking water	Day-old
Infectious Laryngotracheitis (ILT)	Eye drop/spray/injection (recombinant vaccines)/in ovo	Depending on the vaccine and the local epidemiological context

Table 1. Applications of vaccines (Indicative only, check with your local veterinarian).

- Wear appropriate personal safety equipment.
- Calibrate all vaccinators before vaccination for accuracy.
- Check the hygiene condition of the equipment.
- Once reconstituted, the vaccine should be used completely within 30-45 minutes.

Spray vaccination in the hatchery

It is possible to administrate some vaccines by spraying them on the chicks at the hatchery. It is an easier system, but some control must be done to ensure the correct vaccination of the chicks.

The dosage of water, the droplet size must be carefully controlled and adapted according to the supplier's recommendations.

This method is often used for respiratory vaccines (IBV, NDV) and live coccidiosis vaccines.

Conclusion

Vaccination is an important part of the chick quality process in the hatchery. Vaccination failure can cause some several damage to a flock of birds, that is why it is important to follow and assess the vaccination procedure strictly in the hatchery. Starting from vaccination reception to vaccine administration all the steps should be carefully followed by trained people. It is useful to create a Standard Operating Procedure Manual, that describes the way to perform each vaccination or treatment in full detail.

Finally, it is impossible to provide a health programme to suit all geographic areas adequately. For this reason, it is strongly recommended that a local specialist is consulted to establish a prevention programme suited to the region. ■