Monitoring of day old chick vaccination by injection

Vaccination equipment should be handled by skilful and well trained employees. The only way to discover failures and to improve vaccination technique is to continuously monitor the quality of injection. Dosing accuracy Volume control is systematically performed at the beginning of each vaccination day and repeated each time the number of vaccinated chicks does not match the number of vaccine doses used (for example, 800 or 1,200 chicks for a 1,000 doses bag or bottle). It consists of measuring the volume obtained after 50 injections in a graduated cylinder. The amount found must be 5ml with a syringe adjusted for 0.1ml dose, and 10ml with a syringe

Table 1. Injection quality criteria.

Feature of poor vaccination	Description
Wet fluff	The dose is not fully deposited inside the bird
Bloody/injured chicks	Bleeding on the neck caused by the injection
Wrong position	Injection in the wrong place
Killed chicks	Chicks killed by the injection
Non-vaccinated	Without vaccine trace

adjusted at 0.2ml. This volume may appear quite high but it is necessary to reach a good accuracy check. The mechanical construction tolerances of these machines (0.1mm) and the acceptable volume tolerance in the vaccine diluent bottles or bags result, in practice, in a dose variation ranging between 0% and 10%. Therefore, it is considered normal to vaccinate between 900 and 1,100 chicks with a 1,000 dose bag or bottle.

Injection quality efficiency

Accuracy of the injection site depends on the machine settings, which must be corrected if required. Also, when the work rate is too fast in semi-automatic or manual vaccination, the operator often holds the chick in an inadequate position and injection is not performed properly. An oil based vaccine (white) can be readily discerned under the skin. On the contrary, a water based vaccine will require the use of a specific dye (FD&C Blue No. 1 or Patented Blue V). The quality of vaccination is highly dependent on the operator's level of skill and fatigue (see Table 1).

General data collection

It is essential to complete a vaccination register that includes all the useful elements for good traceability of the operations:

1-Date and time.

2- Machine number.

3- State of the machine at the beginning of vaccination.

4- Operator’s name.

5- Expiry date and batch number of the vaccine.

6- Vaccine brand name.

7- Presentation (number of doses), volume injected per bird.

8- Number of vaccinated chicks.

9- Number of chicks with ‘wet down’, bleeding, lameness or killed.

10- Remarks.

Conclusion

Vaccination monitoring is as important as the vaccination technique itself. Even the best vaccine in the world can only work if it is inside the bird, at the right place, and at the adequate volume. The vaccine investment can only be realised with adequate administration. In practice, vaccination control in hatcheries involves performing on-site technical assistance by training and audit programs for hatchery managers and operators. In this context, the availability of audit and diagnostic forms for monitoring all factors relating to the injection vaccination process, from the preparation and handling of vaccines, including the equipment operability and the vaccination process itself, are very important. These materials must be developed to support the practice of hatchery vaccination in order to reach an optimal standard on vaccination quality and to keep records.

Correct subcutaneous injection of a coloured water based vaccine.

Correct subcutaneous injection of an oil based vaccine.

Injury due to incorrect machine setting or inadequate positioning of the chick during subcutaneous injection.

Incorrect machine setting in intramuscular injection. Bleeding and lameness.

Wet fluff. Injection in down or insufficient insertion of the needle under the skin. The vaccine flows out from the puncture site.

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