

# Effective preparation and application for vaccinating broilers

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Sound preparation and correct vaccination administration technique is an essential part of a good poultry management program to ensure bird health and the ultimate success of any poultry operation. The primary objective of immunising any poultry flock is to reduce the level of clinical disease as well as the impact those diseases have on production. In certain instances products like salmonella vaccines have the added objective of protecting consumers and exerting a positive impact on human health.

There are various ways to mass apply vaccinations to poultry in production housing situations. In developed poultry industries, the emphasis is on effective application with the lowest labour costs. In countries where labour is inexpensive and readily available, application strategies that maximise the immune response can be selected. Disease challenges in every production area will additionally dictate the type of vaccine and application technique best suited for that area.

The vaccine or combination of vaccines used should be determined locally according to the recommendations of a poultry veterinarian, based on the particular disease challenge in a region and the birds' expected response to the vaccine. The vaccine deliv-



**Subcutaneous or intramuscular injection at day of hatch.**

ery method would depend on the type of vaccine to be administered, the age at which the bird is vaccinated and the equipment available to perform the procedure.

There are several methods commonly used to vaccinate broilers:

- In-ovo administration at transfer in the hatchery.
- Subcutaneous or intramuscular injection at day of hatch.
- Spray cabinet application in the hatchery.
- Water administration in the broiler house.
- Spray vaccination in the broiler house.

## Hatchery vaccinations

The hatchery affords an opportunity to vaccinate a large number of chickens in one location at a relatively low labour expense. For this reason, an increased number of vac-

cinations are being given at this point in production.

### ● In-ovo vaccination

In-ovo vaccination, most commonly using Marek's vaccines, is performed at the time the hatching eggs are transferred from the setter to the hatcher.

The process and technique used to administer vaccines in-ovo is critical as the delivery must be made to precise locations within the egg and with the highest hygiene levels possible. For optimal performance, vaccine inoculation must be administered between 18 and 19 days of incubation.

Providing certain criteria are met, including timing and site of vaccine placement, vaccine mixing, machine sanitisation, and hatchery management specifications, in-ovo delivery technology has proven to be an efficacious and efficient method of vaccinating of up to 50,000 eggs per hour.

### Spray vaccination in the hatchery.



### In-ovo injectors on eggs.





**Spray vaccination with a backpack sprayer system.**

● **Subcutaneous or intramuscular injection at day of hatch**

Day-old vaccination, most commonly using Marek's disease vaccine, is generally accomplished by giving 0.2ml of vaccine subcutaneously under the skin at the back of the neck or 0.5ml intramuscularly in the leg. The mechanical vaccination machines used in many parts of the world are generally designed for the neck injection. A skilled operator can vaccinate about 1,600-2,000 chicks/hour. A dye is frequently mixed with the vaccine to allow visualisation of the vaccine after the injection. With this method, needles should be changed several times during the course of the day to prevent bird damage due to burred or bent needles.

● **Spray vaccination in the hatchery**

In many areas, chicks are vaccinated with live vaccines using a spray cabinet that administers a defined amount of water borne vaccine to each box of chicks. The droplet size is carefully controlled and vaccination can be visualised on the chicks as either moisture or dye. This method is typically used for respiratory vaccines (IBV, NDV) and live coccidiosis vaccines.

## Vaccinations on the farm

● **Spray vaccination with backpack sprayer**

Backpack sprayers have become a popular method to mass administer live respiratory vaccines to broilers. Several equipment designs are available and modifications can be made to agricultural sprayers to accomplish this technique as well. Follow the manufacturer's instructions for the particular equipment you are using.

Always use at least two people to vaccinate. Larger facilities may require up to three people for proper vaccination. A designated vaccination crew is preferred. The flock service technician should be present if possible when a flock is vaccinated.

It is important that the sprayer must be used for vaccination only (never for pesticides, herbicides or disinfectants). Wear gloves, mask and safety glasses during preparation and vaccine administration. Mix the vaccine on the farm, just prior to vaccinating each house, using clean, non-chlori-

nated water that has had vaccine stabilizer added. Distilled water is ideal. Water should be no warmer than 80°F (27°C) and probably no cooler than 60°F (16°C). Pour enough water into the sprayer tanks to allow the vaccinators to walk the length of the house twice slowly without running out of vaccine (minimum one gallon/3.75 litres per 100ft/30m).

To prepare the house, close all curtains completely, turn off all ventilation fans, dim the lights as low as possible to keep the birds calm during vaccination, raise brooders (if possible) and, during hot weather, vaccinate very early in the morning.

When spraying, direct the nozzle 3ft (1m) above the birds' heads. After the spray vaccination is completed, be sure to reset all curtains and fans to previous positions.

● **Water vaccination**

Utilising the watering systems found in poultry housing is a common method to administer live vaccines. Birds must be water restricted prior to vaccinating in order to make the birds thirsty enough to ensure all birds are ready to drink once the vaccine is administered.

Water consumption is an important variable to calculate so that the correct amount of water can be used to mix with the vaccine. For houses with water meters, the consumption rate is easily obtained.

Without a water meter, a practice run using only water two days before vaccination will verify the amount of water needed.

Prior to vaccination, all medication, disinfectants and chlorine must be removed from the drinking water 72 hours before vaccination. Always administer the vaccine in the water early in the morning. Sufficient drinker space is required to allow free access to the vaccine solution.

When preparing vaccine, use a graduated plastic bucket or prepare the vaccine directly in the water tank. The addition of skim milk powder to the water 20-30 minutes prior to adding the vaccine is recommended as a stabiliser. Add the skim milk powder at the rate of 1lb/50 gal (500g/200 litres). Open the vaccine vial by removing the aluminium seal and the rubber stopper. Using the water that will be used in the vaccination, fill the vial approximately two thirds full. Close the vial with the rubber stopper and gently shake in order to reconstitute the lyophilised vaccine. Rinse the vaccine vials several times to remove all the vaccine. Pour the reconstituted vaccine into the drinkers, or open the valve of the water tank or the proportioner. Walk the birds to check if they are all drinking water. If using hand drinkers, redistribute drinkers if necessary. Note that the birds must drink all the vaccine solution in no more than two hours, and never in less than one hour.

Record all vaccine information as well as any problems which may occur with the birds or the vaccination process. This information may be important for the evaluation of the results. All medication, disinfectants and chlorine must be suspended from the drinking water until 24 hours after vaccination.

Effective preventive procedures such as vaccinations protect millions of poultry flocks worldwide from many contagious and deadly diseases and have resulted in improved flock health and production efficiency for the industry. Improved bird immunisation through vaccine usage cannot be a substitute for poor biosecurity and sanitation.

Vaccination programs may not totally protect birds which are under stress or in unhygienic conditions. Vaccine programs are most efficient and effective when supported and used in conjunction with good flock management practices. ■

**When spraying, direct the nozzle 3ft (1m) above the birds' heads.**

