

Field Spray Vaccination of Layer Pullets



Coarse spray administration is a common method used to apply live attenuated vaccines to pullets and layer flocks in both caged and floor-raised houses. It is an ideal technique for delivering vaccines that replicate primarily in the respiratory tract.

In this guide, we'll review important factors of successful field vaccination, including:

1. Vaccine handling and mixing
2. Uniform vaccine application and minimizing bird stress
3. Sprayer cleaning and management

1 Vaccine handling and mixing

- ☐ Transport vaccines on ice rather than ice packs.
- ☐ If the vaccine is frozen, use distilled water less than 70°F for thawing.
- ☐ If the vaccine is lyophilized, resuspend the cake in a small volume (10-20ml) of distilled or clean, unchlorinated water of less than 70°F.
- ☐ Prepare the sprayer by adding distilled or clean, unchlorinated water to the sprayer tank (~1 gallon). Add vaccine stabilizer to the water in the tank and mix thoroughly. Vaccine stabilizers are recommended to help buffer against suboptimal water conditions.
- ☐ Once water and stabilizer have been added to the sprayer and thoroughly mixed, add thawed or resuspended vaccine to the sprayer tank. Mix thoroughly again to evenly distribute vaccine in the sprayer tank.
- ☐ Finish by adding enough distilled or clean, unchlorinated water volume to spray all birds in the house.



Recommendation: Use distilled water. For thawing frozen vaccine, water should be less than 70°F.



Add distilled water and vaccine stabilizer to the sprayer tank and mix before mixing in thawed or resuspended vaccine and additional distilled water.



Important: Use vaccine within one hour of mixing.

2 Uniform vaccine application and minimizing bird stress

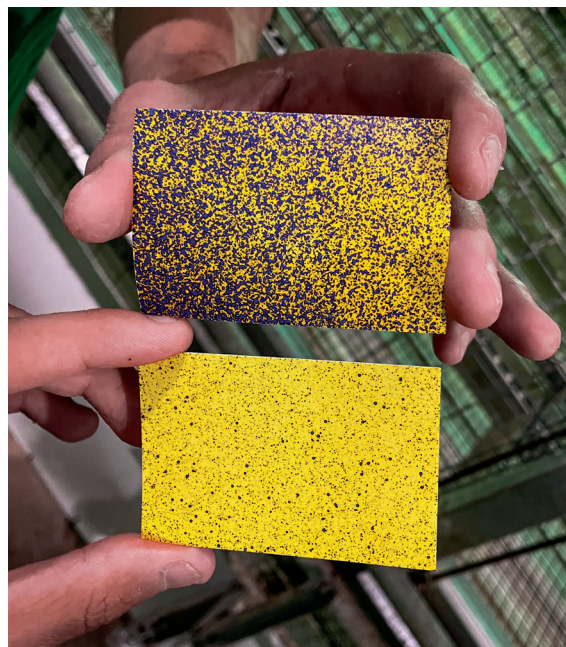
Optimizing application uniformity

Uniform vaccine distribution and bird exposure are critical components of a successful vaccination program. Backpack and cart sprayers are made for spray vaccine administration, but many factors can impact effectiveness of the application, including:

- ☐ Bird density
- ☐ Movement of personnel applying vaccine
- ☐ Position of the spray nozzle
- ☐ Volume of liquid
- ☐ Particle size and distribution
- ☐ Sprayer output pressure

To evaluate the water droplet pattern from a sprayer:

- ☐ For **floor-raised houses**, tape sheets of water-sensitive paper onto several cardboard boxes at bird height. Place boxes near the side wall of the house and next to the feed line.
- ☐ For **caged and aviary systems**, attach the water-sensitive paper to the inside of cages using plastic clothespins, and attach the paper at the furthest point birds can stand.
- ☐ Fill sprayer with distilled water, no vaccine.
- ☐ Perform a simulated vaccination procedure (this can be done with or without birds in the house).
Test spray pattern at all tiers to validate a consistent spray volume output and pattern.
- ☐ Collect the paper strips and evaluate droplet distribution.



Water-sensitive paper that changes color when wet can be used to assess distribution and particle size (diameter) of liquid droplets.

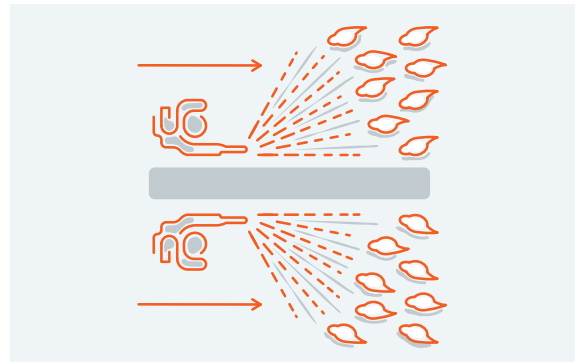
Evaluating spray distribution:

A pattern of evenly distributed small dots is desirable (top example, above). If the distribution is not satisfactory (bottom example, above), review and adjust one or more of the following:

- ☐ Nozzle outlet setting or opening — the nozzle should be set to spray in a vertical pattern.
- ☐ Walking speed of the person administering the vaccine.
- ☐ Output pressure of the sprayer (if applicable)
- ☐ Distance of the sprayer from the birds
- ☐ Repeat the procedure until the desired test distribution is achieved.
- ☐ Reassess coarse spray vaccination procedures quarterly and whenever there is a personnel change.

Vaccine application process

- ☐ Conduct a dry run to establish a consistent, slow, even pace and to calibrate the proper water volume (may differ by housing type). The dry run is important for establishing the total volume of water needed to apply vaccine to the whole house.
- ☐ Run the backpack or cart sprayer at full throttle and maximum flow rate to optimize the throw distance and the uniformity of droplet size.
- ☐ Move at a consistent pace throughout every section of the house.
- ☐ For **floor-raised houses**, aim the sprayer wand at about 45 degrees toward the birds, waving the wand toward the wall and back as you move to ensure even coverage.
- ☐ The recommended distance from nozzles to birds is no more than 3 feet. Keep the same distance and angle that are consistent with the successful test paper.
- ☐ Before leaving the farm, return all houses to normal settings if modified for spray application.



Run the backpack sprayer (top illustration) or cart sprayer (bottom image) at full throttle and maximum flow rate at a consistent pace throughout the house to optimize the throw distance and droplet size uniformity.



Important: Use up thawed or reconstituted vaccines within one hour.

Minimizing bird stress

- ☐ Avoid spray vaccination during the warmest part of the day during summer months.
- ☐ Decrease ventilation to its lowest setting to ensure maximum vaccine exposure.
- ☐ Reduce light intensity to discourage bird movement.
- ☐ Maintain a slow, consistent pace, especially when nearing the far ends of the house.
- ☐ Return lights and fans back to their normal settings after vaccination.

3 Cleaning recommendations for backpack and cart sprayers

Backpack and cart sprayers should be cleaned after each use and given a thorough cleaning each month.

Materials needed:

- ☐ Distilled water
(1-gallon containers recommended)
- ☐ Low-foaming liquid dish soap (e.g., Dawn).

Before each use:

1. Make sure sprayer batteries are fully charged.
2. Add 1 gallon of water to tank.
3. Pump and flush 1/4 to 1/3 gallon of water through line and spray tip into drain.
4. Swirl remaining contents to rinse tank, and discard.

After each use:

1. Clean exterior with brush and mild liquid detergent.
2. Mix soap solution at 1/2 ounce per gallon with distilled water and add to spray tank.
 - a. Flush half the solution through the line and spray tip into an appropriate drain.
 - b. Swirl the remaining wash and allow it to soak for 5 minutes. Swirl again and discard wash.
3. Add 1 gallon of distilled water to the tank.
 - a. Flush sprayer line (pressure) to remove residual cleaner.
 - b. Pump 1/4 to 1/3 gallon of water through lines and tip into an appropriate drain.
 - c. Swirl remaining contents to rinse tank, and discard.
4. Empty the container and lines. Store dry and hang upside down (if possible) so any residual wash can drain from the tank.
5. Store away from the barn interior, if possible, or store covered.



Use mild liquid detergent and brush to clean the backpack or cart sprayer.



Flush half of a soap solution through the sprayer line and tip.



Allow sprayer tank to soak with soap solution for 5 minutes before emptying and flushing with distilled water.

Monthly cleaning recommendation:

- ☐ Disassemble and check tip, hose, seals, etc.
- ☐ Soak tank in 20% vinegar solution or Ultra-Vin94R to adjust pH and remove scale (biofilm).



For more information on vaccine application best practices, contact your Zoetis representative.

Note: Because each operation varies in housing and personnel, this manual provides general guidance for proper vaccination techniques.