



Bio-security measures at poultry farms and its overview

S. S. Patel, S.K. Mohapatra., A. C. Patel and M. D. Shrimali

Department of Veterinary Microbiology , CoVSc & AH, KU, Sardarkrushinagar

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Biosecurity is securing protection from microbes which include all required measures that should be taken for making poultry farm disease free

Cleaning and Disinfection of poultry shed

- Most of diseases can be controlled with good cleaning and disinfection management practices. The shed should be disinfected after vacating all birds, of one operation and before arrival of new flock.
- Water jets and then washing soda solution will be used for cleaning of all drinker, feeders, hovers etc. Then dip them in a virucidal disinfectant followed by sun dry.
- All the organic materials like dead birds, litters and other waste materials were discarded from farm premises after treatment with 5% to 10% formalin and packed in a disposable bag.
- Sodium hypochlorite (5% to 10%) will be used for cleaning watering system. The solution will be kept in piping system for overnight or minimum 3 to 4 hours followed by flushing the system with plain water to remove the solution.
- Brooders made up of Bamboo should be disposed by burning from viral and fungal (brooder pneumonia) infected sheds.

Chemical Treatment: The cleaning of floors will be carried out by using caustic soda (NaOH) with pH above 12. Ten to twelve grams caustic soda flakes will be added in one litre of water and will be used @ 1 litre/ 10 square feet. Washing Soda can also be used (Na_2CO_3) @ 500 gms/ 10 litre of water/100 sq. feet. After 12 hours to 24 hours the floor will be washed with plain water.

Then the floor will be disinfected by spraying below mentioned disinfectants like Quaternary ammonium compound or 10 to 20 ppm chlorine, 1000 ppm Iodine solution.



To control the parasitic infestation specifically ticks, mite and lice, the shed should be sprayed with Cythion @ of 8-15 ml per 1 litres of water. Also painting in form of white wash in the shed with lime solution with 1% kerosene and 5% formalin can be done.

Fumigation with formaldehyde gas is a common practice. To 40 ml of formalin 20 grams of potassium permanganate can be added for a volume of 100 cubic feet. Fumigation is more effective in humid conditions than dry and temperature above 24 C. Hence, spraying the walls and floors with water before fumigation is necessary.

After cleaning and disinfection, keep the shed vacant for a period of 15 days. It is always advisable, of spraying virucidal disinfectant 48 to 72 hours before actual arrival of chicks.

Whitewash: Variable proportion of different ingredients like 13.5 litre Cream of lime +500 ml Formalin+1 litre Kerosene+6.5 litre Water. Cream of lime can be prepared by mixing quicklime with water at a ratio of 1:2.

The following ingredients can be added for special effects like 450 gms Alum, 600 ml Molasses and 450 gms bar soap dissolved in 4.5 litre of boiling water.

Biosecurity in poultry farm:

Biosecurity is in order to prevent the introduction and spread of poultry pathogens into the farm and shed. Strict implementation of biosecurity measures is advised. Use of effective disinfection program, sanitation, general maintenance, personal hygiene, adopting effective control strategy to restrict men and material movement, feed vehicle, wild birds and other animals together will help in achieving good biosecurity in and around farm premises and prevent breeder flock from getting exposed to the poultry and perform better. Ssematimbaet *al* (2013).

Key points for achieving good biosecurity:

1. The poultry farm site should have isolated location.
2. The ideal poultry-breeding farm should be at least 3 km from any commercial or backyard poultry.
3. Farm boundary should be fenced by chain-link fence buried to a depth of 18 inches and topped with barbed wire to prevent the entry of unauthorized persons and animals.
4. Keep the doors and gates locked at all time.
5. Provide separate vehicle and foot dips at entrance of the farm. Change the vehicle, foot dip and hand sanitizer solution at every point at least twice in a day.



6. Restrict the visitor's entry and maintain record of the same.
7. Provide shower facility, changing of dress and foot ware before entering in the farm or premises.
8. Farm should have toilet and hand wash facilities separate from the poultry house.
9. No pet and other animals are allowed in and around the poultry housing.
10. Provide hand sanitization and foot dips at entrance of each shed.
11. Restrict the movement of men and material within the farm premises.
12. All surrounding area around the house should be level and free from vegetation, debris, unused equipment that could harbour vermin, rodent.
13. Avoid water pooling between the sheds.
14. Visit youngest and clean flock first and oldest and ailing flock at last in the day to prevent cross-transmission of pathogens to young birds.
15. Farm supervisor should be given responsibility of one age group and while visiting different sheds he should follow all the biosecurity measures.
16. If equipment is to be used from other farm or section, it should be cleaned and disinfected properly before it is brought onto/ in the premises/shed.
17. All breeding operations should be meant for single purpose (Brood and grow or laying) operations and whenever possible single age group principle is to be adopted.
18. The water supply to poultry house should be of satisfactory potable status.
19. After exit of a flock, all manure is removed from the house and effective cleaning and disinfection procedure is to be followed. Rodent and insect control procedures also to be carried out.
20. Adequate down-time (rest period) between flock placement should be given. A minimum period of four weeks for growers and six weeks for laying house is needed.
21. A continuous integrated program should be in place to control rodents.
22. Microbial monitoring of new litter material and shed monitoring is must before placing new flock.
23. A disease-surveillance program must be followed for all materials used or introduced onto the farm site. This involves examination of each load of floor litter material and consignments of feed for bacterial and fungal pathogens.
24. Poultry flocks are to be regularly monitored for salmonella and other poultry pathogens.
25. A closed post-mortem room with adequate natural light should be near to dead bird disposal area.
26. Sick and dead birds are to be removed from poultry houses as soon as possible and disposed by effective and safe burning method. Dead bird should be carried to post-mortem room in closed plastic bags.



27. Serological and environmental monitoring programs for breeder flocks are necessary components of biosecurity. Serological flock profiling to monitor vaccination and disease challenge will depend on the prevalence of infection and range of diseases in the region of operation.
28. Poultry working personnel should be checked for human salmonella status once in a year.
29. The vaccination crew, needs to follow all the biosecurity protocol.
30. Timely measures for control of flies and pests must be adopted using approved chemicals/methods.
31. Frequent collection and sanitation of hatching eggs, is an effective method to reduce and control the effects of faecal and environmental contamination. Lu *et al* (2003).
32. The sanitized eggs should be stored in clean egg flat.
33. The egg containing flats should be transported to the hatchery in clean vehicle, which should be fumigated or sanitized with a liquid disinfectant. The cleaning and disinfection of vehicles must be a regular part of the hatchery routine.
34. Store the hatching eggs in a clean, dust free cold room used exclusively for this purpose.
35. Monthly monitoring of the cold room should be done by lab.
36. Full records relating to mortality, disease diagnosis, treatment, vaccination, medication, production etc are maintained on an individual flock basis within the farm.

Biosecurity: -

All In All Out: Separate brooding and growing facility away from laying facility. All birds will enter in shed at a time followed by exit at once.

Restriction on Men & Material: Sales persons, egg buyers, servicemen and visitors should not be allowed. There should be minimal movement of personnel and materials.

Foot Baths: Foot baths with disinfectant should be provided at the entry of the farm is a must requirement.

Foot Wear: Foot wears (preferably rubber slippers) should be used for changing the foot wear before entering the farm.

Disposal Methods of Dead Birds: The immediate burning or burying of dead birds is an important part of a good disease prevention program.

Incinerators: A good incinerator is required for disposal, especially in an area where there is poor soil drainage or a danger of contaminating the water supply.

Disposal Pit: A pit of 6 ft (1.83 m) in diameter and 6 ft deep (1.83 m) is large enough to take care



of one 10,000 capacity layer unit. All dead birds should be removed immediately and disposed properly.

Rodent and Pest control: Rodents are major vector and reservoir of Salmonella infection resulting in increase in level of contamination in the environment and transmit the infection to other poultry houses and farm. Therefore, it is necessary to prevent rodent access to feed, water and denying shelter by:

1. Building rodent –proof poultry houses (metal door and concrete floor)
2. Eliminating harbourage area inside and outside of house
3. Appropriate house management and sanitation
4. Disposing of dead birds and unused or spilled feed
5. Regular inspection and monitoring of rodent activity
6. Rodent baiting and trapping
7. Control insect vectors (flies and beetles) through good management practices and selection and use of pesticide after cleaning and disinfection. Amass *et al* (2000).

General Disinfectants use and application:

1. Disinfection implies the elimination of all microorganisms in the house, which are pathogenic or have the potential to produce a disease. A disinfectant can be bactericidal at a concentration and bacteriostatic at lower levels.
2. Effective disease control measures by disinfectants will reduce or eliminate the need for medication specially the use of antibiotics. Cost of a sound disinfection program is always much less than the cost of even a short course of antibiotic therapy.
3. Natural disinfectants: The value of sunlight as a natural disinfectant in poultry houses is immense. Desiccation from fresh air and wind will also contribute to the destruction of bacterial load when microbes are exposed. The high temperature will accelerate the destruction of organisms.
4. Chemical disinfectants: Disinfection in farm is carried out by chemical agents. The lethal action of the chemical is expected by their ability to reach with the essential enzymes of the microbes by coagulating or precipitating or denaturing their protein coat.



5. The chemical disinfectants act very effectively when they are easily soluble. Emulsification of phenol in a soap solution enhances the activity of disinfectants.

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