

# Let's talk Chicken

With

**Dr Anthony Chacko**

**(National Milling Corporation)**

**National Trustee, Poultry Association of Zambia.**

## **BIO-SECURITY MEASURES TO KEEP POULTRY DISEASES AT BAY**

Zambia had been enjoying a climate comfortable for chicken rearing with a reasonably dry climate and moderate atmospheric temperatures most of the time. Not any more. Especially in the last decade or so the temperatures are getting higher and higher making the birds quite uneasy. They tend to die more or their performance becomes poor. The diseases of poultry in Zambia are on an increase due to several reasons. Some of them are intensification of poultry rearing, indiscriminate growing systems, multi age rearing in the farms, keeping other species in the farm especially pigs, cattle and other type of birds including ducks and village chicken etc. Other major reasons for the spate of disease outbreaks are: cold chain for vaccines is being quite often broken due to longer load shedding of late, irresponsible or ignorant handling of vaccines and vaccination, , lack of proper farm hygiene, sanitary and disinfecting practices at the farms.

What we have seen in some poultry pockets in Zambia are viral diseases such as Infectious Bronchitis (IB), Egg Drop Syndrome (EDS), Newcastle disease, Gumboro etc. Newcastle is found in both Layers and broilers. There seems to be in certain farms always an undercurrent of Chronic Respiratory disease and Infectious Coryza.

BIOSECURITY MEASURES: Let me put some points straight:

- Prevent the introduction of new birds to a previously infected facility for 2-3 weeks after a complete cleanout. All birds should be removed in this process.
- Clean out vegetation around poultry houses and pens to remove shelter and food for possible carriers of the virus.
- Institute a vector control program for insect, mammalian, and avian vectors. It is important because these vectors can both directly transmit or indirectly carry infected feces from one house, pen, or premise to another.
- If possible, keep birds in closed houses. With wire mesh on the sides to keep away wild birds.

- Have a foot dip disinfected frequently before any one enters your poultry house.
- Institute an insect control program.
- Rodent control and preventing the movement of rats between houses on a single premise are essential.
- Prevent the accumulation of standing water in the premises. This is a great attraction to migrating waterfowl, which can carry Newcastle disease virus without showing clinical signs of the disease.
- Limit sources of food for wild and free-flying birds. Cover all feed storage. Most of viral diseases are reported to have been transmitted to birds via contamination of feed with infected feces. Clean up spills when they happen.
- Educate your employees about the potential dangers of live bird markets and fairs and advise them not to rear their own poultry at home or elsewhere. Advise them not to visit any poultry farm.
- Advise your employees to avoid dead wild and free-flying birds they find. Any found on your premises must be treated as though they are highly infectious. Handle them with gloves, place in a plastic bag, and seal it, finally, a complete change of clothes including shoes and a shower should happen before entering poultry facilities.
- Introduction of new birds or unsold birds returned to the farm from the markets can serve as common source of viral and bacterial infections.
- Do not allow used egg trays back into farm from market place.

**Traffic control:** It includes both the traffic onto your farm and the traffic patterns within the farm.

- Be a good neighbour. If you have or suspect any infection at the farm, initiate a self-imposed quarantine.
- Most critically, stop all movements of people
- Get birds (some sick and some dead) to the diagnostic laboratory.
- Get advice from industry or veterinary department.
- Keep logbooks of visitors to your facilities.
- Keep human farm-to-farm traffic to a minimum. Conduct business by phone when possible.

- Find out where someone has been before inviting them onto your premises. Inspect visitors for evidence of cleanliness and contact with other birds before they come onto your premises.
- Make no unnecessary visits to other farms as mentioned earlier.
- Do not let truck drivers, repairmen, or delivery personnel step out onto your facility without clean or new protective foot covering and clean coveralls. It is best to provide plastic boots and coveralls for this purpose. Shoes and clothes are an excellent vehicle for the transmission of infection.
- Do not allow persons employed at other poultry operations on your premises.
- Isolate dead bird disposal outside the perimeter of the farm. Control traffic to and from bird disposal. Carcasses can be a significant source of infective germ. Any unusual mortality should be taken to the laboratory for a diagnosis as soon as it is possible.

**Sanitation:** It addresses the disinfection of materials, people, and equipment entering the farm and the cleanliness of the personnel on the farm.

Even though the infective agent like virus or bacteria can survive at room temperature for days to months it is sensitive to most disinfectants and can be readily inactivated if a surface is properly cleaned first. Organic material, like feathers and feces, must be removed before disinfection, to be effective. All manure should be removed and all surfaces thoroughly dry cleaned prior to applying disinfectants. Next, apply the disinfectant to all surfaces twice, allowing the disinfectant to dry between applications. The house should be left empty for 2-3 weeks before repopulation.

Prevent the spread of infection through equipment:

- Make sure that any vehicles coming near your flocks are not contaminated with litter or feces. Wash and disinfect the tires of all vehicles entering the premises through wheel dips.
- Enclose all dead birds to be taken to the laboratory in plastic bags. Confine live birds being submitted to the laboratory in boxes that will not return to your farm. Disinfect any vehicles returning from the laboratory. Do not let anyone who has been to the laboratory return to your flock without a shower and a change of clothes.
- Do not allow vehicles in areas grossly contaminated with manure.
- Wash and disinfect all egg trays, carts, and racks making sure to remove all feathers, feces, and egg material.

**Fumigation:** This is one of the best methods to have majority of germs destroyed.

Use both Potassium permanganate and formalin. For every 100 cubic feet (approx. 30 cubic meters) 20 gms of Potassium permanganate and 40ml of Formalin can be used.

Procedure:

- Close the shed completely, side walls, doors etc.
- Use deeper containers- earthen pots or any unbreakable containers (metal drums). Do not use plastic containers.
- Keep the containers about 2.5 to 3 meters apart in the poultry house
- Keep 50gms (10 to 12 teaspoon full's) of Potassium permanganate in each container.
- Pour 100 ml of Formalin to the potassium permanganate in each container, as fast as possible, since reaction takes so fast.
- The person should come out of the house immediately after he finishes with the last container.
- Do not ever drop Potassium Permanganate in formalin but add Formalin to Potassium permanganate.
- Keep the poultry house closed for 12 hours.
- Take precaution not to have any litter or inflammable materials near the site of fumigation.
- Keep the house open for 6/8 hours before the poultry is placed so that all residual fumes escape from the house in ample time

These are some of the measures (some are repetitive for the emphasis!) for developing a strategy for cleaning and disinfection.

General comments:

Spraying a facility with a virucide after complete depopulation is the best method to remove any pathogen from an infected facility. At the same time a vector control program should be instituted, followed by removal of manure, cleaning of all surfaces followed by a second application of viricidal spray. One of the viricidal preparations popular in Zambia is VIRUKILL. The active ingredient is Poly Dimethyl Ammonium Chloride (120g/L). The mixing rate is 200ml in 100 L of water for spraying ( other

technical information can be Googled). Spray 0.5 –1 L solution per square meter on surfaces and wash off after half an hour. Another preparation quite popular in Zambia is Ultracide.

Although the birds are vaccinated for most of the diseases except for EDS, vaccines may not completely protect flocks from getting the diseases due to vaccination failure or severity of field infection. Most of the infective agents are extremely sensitive to many disinfectants. However, it is very difficult to inactivate the virus if it is in organic material, such as feces. Therefore, it is very important to use a combination of both cleaning and disinfection to get rid of the virus. Phenols, bleaching powder, formaldehyde or quaternary ammonia disinfectants are some of them that can kill them.

Sources of equipment in use in bio-security programmes:

- Hand-held or portable high-pressure sprayers are useful in washing and disinfecting equipment and poultry houses.
- However, hand-held sprayers do not have enough pressure to cut through organic material and, thus, can only be used on clean equipment.
- Disposable coveralls, boots, and caps can be provided to visitors.
- Other materials important in a bio-security program including signs, gates, pylons, and other indications of barriers are important in preventing unwanted human traffic.

**Immunity and vaccination:**

The immunity of birds to viral infection depends on the vaccination programme chosen. The maternal immunity in young chicks varies based on the immunity status of breeder birds. Time of vaccination for commercial birds, therefore, is paramount and correctly advised by breeders.

When employing a vaccination programme for chicken, both broilers and layer pullets, type of vaccines, immunity and disease status of birds to be vaccinated, and the level of protection required in relation to field conditions should be considered.

A few words on vaccinating village chicken for Newcastle Disease (ND) using thermo stable (heat resistant) vaccines:

This vaccine is exclusively for village chicken, ducks and other types of birds in the surrounding areas.

Traditionally all commercially available live vaccines are heat sensitive and require storage at or below 4°C. But, two heat resistant vaccine strains have been developed, known as V-4 and i-2, mainly used in protecting village chicken from ND. In Zambia at Belmoral, i-2 ND vaccine is produced with the help of Kyeema Foundation, Australia. Heat resistant vaccine like i-2 ND vaccine also needs long term refrigerated storage; during transportation to the field the vaccine will not deteriorate as quickly as the

traditional vaccines. If stored in direct sunlight or allowed to reach high temperature (above 37°C) for more than a few hours it will also deteriorate and be unsuitable for use a vaccine.

However, evaporative cooling provided by wrapping the vaccine in a damp cloth will be adequate for maintaining the viability of the vaccine during transportation to remote villages.

In conclusion, a general pattern should be observed in order to have your poultry houses and premises disinfected in their entirety, as given below;

- Move out all birds , litter and equipment
- Wash, repeat washing with a detergent.
- Spray with a disinfectant
- Fumigate
- Provide and maintain wheel bath at the gate and foot dips with proper disinfectants at the entrance of poultry houses

We need to look at the bio-security measures more closely and critically since Zambian poultry has been embroiled in diseases of late. We need to educate every one involved in poultry development in this country of basics of bio-security. We all have to jack up what we need to do in this key area.

---

ChackoA@nmc.co.zm