

BIOSECURITY STANDARD OPERATING PROCEDURES (SOPs) FOR THE NIGERIAN POULTRY VALUE CHAIN

1.0 Purpose and Scope

This SOP describes the biosecurity measures to apply for the various activities across the poultry value chain to ensure biosafety and reduce microbial contamination.

2.0 General Information

2.1 Definitions

- **Decontamination** is the removal or neutralisation of pathogens through the process of cleaning and disinfection.
- **Cleaning** is a two-step process. This involves dry cleaning, followed by wet cleaning. Dry cleaning involves removing organic material using brush or blow drying, while wet cleaning involves using water and soap or detergent to remove organic material, dirt, or grease from contaminated buildings, equipment, people and vehicles .
- **Disinfection** involves the use of chemicals that kill or slow the growth of pathogens.

2.2 Proper sequence to follow when putting on personal protective equipment (PPE)

Put on the following in this order:

1. Coveralls
2. Shoe covers
3. Respirator or face mask
4. Goggles and pull up coveralls hood
5. Apron
6. Inner and outer gloves

2.3 Proper sequence to follow when taking off the PPE

Follow actions in this order:

1. Wipe outer gloves with germicidal wipe.
2. Remove the Apron...
3. Shoe covers
4. Outer gloves
5. Coveralls

6. Goggles
7. Respirator
8. Inner gloves, and then
9. Wash hands with soap and water.

3.0 Biosecurity Standard Operating Procedures (SOPs) for Indigenous (Local) Poultry

- 3.1 Use clean sources of water (potable water) and feed for the birds.
- 3.2 Use troughs to provide water and feed for the birds.
- 3.3 Clean feed and water troughs regularly and change them when they are bad.
- 3.4 Birds should be limited to similar species so as not to introduce disease into the flock.
- 3.5 Source breeding stock from household flocks, avoiding Live bird Markets (LBMs). If necessary to buy from LBMs, quarantine new birds before introduction.
- 3.6 Maintain adequate levels of personal and environmental hygiene such as:
 - 3.6.1 Wash hands with soap and water after touching/handling birds and after disposing any waste.
 - 3.6.2 Sweep the compound & poultry sleeping areas regularly to remove droppings and sprinkle detergent water left after washing of clothes to reduce microbial contamination.
 - 3.6.3 Wear protective clothing while cleaning, e.g. wearing a face mask or handkerchief. to prevent inhaling dust.
- 3.7 In case of mortalities, carcasses should be disposed by burial.
- 3.8 Manure from the local poultry system should be composted before being used as fertilizer on farmland.

4.0 Biosecurity Standard Operating Procedure (SOPs) for Breeder Farm:

Every breeder farm must have a biosecurity plan and a designated biosecurity coordinator to ensure implementation of the plan.

4.1 Conceptual Component (Siting Breeder Farm)

- 4.1.1 Poultry breeder farm should be located a minimum of 500m from other poultry farms to prevent spread of pathogens.
- 4.1.2 Siting of breeder farm should consider the direction of the prevailing winds to take advantage of ventilation and should be positioned in the east – west orientation
- 4.1.3 Locate breeder pen such that younger birds are not downwind from older bird house.

- 4.1.4 Do not locate breeder farms in lowlands such as flood zones, waterways and wetlands that are prone to flooding.
- 4.1.5 Do not locate breeder farms a minimum of 300 meters from major roads that may be used for transportation of poultry or poultry products.

4.2 Structural Component

- 4.2.1 In multi-age breeder farms, a minimum of 30 meters spacing between poultry pens housing birds of different ages is recommended.
- 4.2.2 The breeder farm should be fenced to prevent entry of unauthorized people and other animals with an entryway with tyre- & foot- bath for people and vehicles provided.
- 4.2.3 The poultry pen surrounding house should be kept clear of debris and vegetation kept short. If possible, pen surrounding should have a metre perimeter stone chippings or cement apron to facilitate cleaning and disinfection.
- 4.2.4 Breeder pen walls, ceilings and floors should be smooth to permit cleaning and disinfection.
- 4.2.5 The breeder farm traffic should be a unidirectional flow from the least contaminated to the most contaminated areas preventing backtracking of people, equipment, and vehicles.
- 4.2.6 All sick and injured birds should be culled and not hospitalized or quarantine in the farm.
- 4.2.7 All breeder pen openings should be fitted with screen to prevent entry of insects.
- 4.2.8 The breeder farm should have a single-entry point equipped with disinfection equipment for all vehicles, people and equipment that are brought onto the premises.
- 4.2.9 Each poultry pen entrance should have a cleaning & disinfection station equipped with well-maintained cleaning and disinfection basins which all staffs are trained in how to properly decontaminate on entry and exit from the house.
- 4.2.10 Breeder pen access should be through a compulsory compartment having physical separation between the clean and dirty area where cleaning and disinfection can be conducted with provision of clean clothes to everyone entering.

4.3. Operational Component

4.3.1 Quality of chicks

- 4.3.1.1 Obtain quality chicks from reputable sources and request the health certificate for chicks.
- 4.3.1.2 Collect samples from chicks to the laboratory to ensure they are disease free.
- 4.3.1.3 Weigh chicks to know the chick's uniformity and check cloacal temperature.
- 4.3.1.4 Cull and safely dispose unhealthy chicks.

4.3.2 Farm staff

- 4.3.2.1 Farm staff must shower in the central cleaning station before entering the farm site. All personal clothing must be removed and replaced with donning clean work uniforms.
- 4.3.2.2 Farm staff must also shower and change clothing before entering any specific housing unit within the farm
Site
- 4.3.2.3 Do not allow movement or transfer of designated farm staff to another housing unit within the farm site, or to other farms, outside the farm site.
- 4.3.2.4 Dip feet in the footbath filled with solution of a disinfectant before entering the farm and when leaving the farm
- 4.3.2.5 Use disposable face masks and hair covers before entering the farm.
- 4.3.2.6 Shower when exiting the farm.
- 4.3.2.7 All dirty uniforms must be cleaned in the farm laundry room. No uniform must be taken outside the farm site or transferred to other housing units.
- 4.3.2.8 Take hand swabs every month and stool samples from farm staff every 6 months to check for infection.
- 4.3.2.9 Medical checks of staff should be conducted every 6 months.

4.3.3 Feed quality

- 4.3.3.1 Select trusted sources of feed if the farm does not have a feed mill.
- 4.3.3.2 Clean and disinfect feed silos before the start of a cycle and before receiving the feed.
- 4.3.3.3 Take samples from the silos and send to the laboratory for testing to ensure that there is no contamination or presence of pathogens.
- 4.3.3.4 When receiving the feed, take samples from each batch and send to the laboratory to check the quality of the feed/contamination.
- 4.3.3.5 Clean and disinfect the feed truck before entering the farm and when it exits the farm.

4.3.4 Disease control

- 4.3.4.1 Use a vaccination program that is approved by the veterinary authority.
- 4.3.4.2 Collect clinical and environmental samples routinely and send to the laboratory to monitor the flock health situation.
- 4.3.4.3 Take samples from the mortalities and send to the laboratory to identify potential infections.

4.3.5 Environment

- 4.3.5.1 Clean and disinfect all farm equipment during the preparation period.
- 4.3.5.2 Clean and disinfect all cooling pads.
- 4.3.5.3 Clean and disinfect all heating units.
- 4.3.5.4 Take temperature and humidity readings every 3 hours and follow the breeder supplier recommendations.
- 4.3.5.5 Check the concentration of dust, ammonia, and oxygen and follow the breeder supplier recommendations.
- 4.3.5.6 Change the litter of the farm after every cycle of production.

4.3.6 Transport

- 4.3.6.1 All trucks must be cleaned and disinfected in the washing station before entering the farm site. Effective and compatible cleaning (detergents, degreasers) and disinfection products should be used for vehicle cleaning & disinfection following manufacturer's recommendation.
- 4.3.6.2 Disinfect the truck again before entering the specified farm.
- 4.3.6.3 Do not allow trucks to move between the farms. Trucks must be cleaned and disinfected each time before use.
- 4.3.6.4 Use specified service trucks for each farm.
- 4.3.6.5 Clean and disinfect crates and cages before loading them on a clean and disinfected truck.
- 4.3.6.6 The catching crew, driver, and other personnel that contact the birds to be transported should wear clean protective clothing and footwear.
- 4.3.6.7 All transportation crew should always clean and sanitize their hands before and after contact with birds, other animals, or equipment.

4.3.7 Water

- 4.3.7.1 Take sample from the water source before starting the production cycle and check for water quality at an accredited laboratory.

- 4.3.7.2 Take monthly water sample and send to the laboratory to check the water quality (both chemical and biological).
- 4.3.7.3 Routinely maintained in line water filters.
- 4.3.7.4 Chlorinate dam and borehole water at a level to achieve 1 – 2 ppm with a holding time for chlorinated water of at least two hours before water is use.
- 4.3.7.5 Sanitize waterlines between flocks since dirty waterlines will interfere with medications and vaccines as well as transmit pathogens.

4.3.8 Vermin (wild birds and rodents)

- 4.3.8.1 . Fence the farm site to avoid entry of cats, dogs, or any animals.
- 4.3.8.2 . Remove all trees or grass around and inside the farm site
- 4.3.8.3 Use appropriate vermin control procedures
- 4.3.8.4 Review the effectiveness of the vermin control procedures monthly.

4.3.9 Waste disposal

- 4.3.9.1 Collect dead birds daily.
- 4.3.9.2 Dispose mortalities and other waste using a waste incinerator or sanitary landfill.
- 4.3.9.3 Do not allow transfer of the mortalities from one site to another site to avoid disease spread.
- 4.3.9.4 Each farm must have its own waste incinerator.
- 4.3.9.5 All empty vaccine vials must be collected and put in a separate bucket with disinfectant before incineration.
- 4.3.9.6 Collect the staff housing rubbish and send to the incinerator or send outside the farm by service truck.

4.3.10 Visitors

- 4.3.10.1 Do not allow visitors to visit the farm site without prior permission from the farm authorities.
- 4.3.10.2 Visitors must be under quarantine procedures for a period of not less than 72 hours before entering the farm site.
- 4.3.10.3 Visitors must follow the biosecurity procedures and those not compliant should be denied access.
- 4.3.10.4 Record all details of visitors in the visitor's logbook. and the reason for the visit.
- 4.3.10.5 Visitors must see the new flock first, then progress to the old flock.

5.0 Biosecurity Standard Operating Procedures (SOPs) for Hatcheries

5.1 Quality of eggs

- 5.1.1 The egg room team should monitor the eggs received from the parent's farm daily and remove any dirty, cracked, or misshapen eggs, which may carry defects/infection.
- 5.1.2 The eggs should be disinfected by appropriate disinfectant by fumigation process (use 43 ml formalin (37.5%) and 21 g potassium permanganate OR paraformaldehyde 7 g per cubic metre) for 20 minutes.
- 5.1.3 Swab samples should be collected by the quality control team regularly and sent to the laboratory to check the microbial load.

5.2 Hatchery staff

- 5.2.1 Staff must shower with disinfection soap in the hatchery shower area before entering the hatchery.
NB: There are two shower areas in the hatchery: one shower area that serves the clean area egg room, the setter room, and offices; and another shower area that serves the dirty area chick room. This ensures movement into the hatchery in one direction and does not allow employees working in the clean area to go into the dirty area and vice versa, to avoid transfer of contaminants.
- 5.2.2 The quality team should regularly collect hand swabs and stool samples from the employees and send to the laboratory regularly.

5.3 Hatchery sections cleaning and disinfection

- 5.3.1 All hatchery sections must be cleaned and disinfected regularly, and at every end of the process by cleaning the walls and floors, doors, tables and drain lines using approved detergents and disinfectants.
- 5.3.2 The quality team should regularly collect swabs from surfaces and air samples and send to the laboratory to check the microbial load.

5.4 Equipment

- 5.4.1 All sections have dedicated equipment which must not be transferred from one section to another, e.g., egg trays and trolleys, chick boxes, incubator machines, egg transfer machines, hatcher machines, etc.

- 5.4.2 There are different cleaning procedures for various hatchery equipment, and they are done at different locations.
- 5.4.3 All equipment at every section must be cleaned and disinfected separately, daily and at the end of every process, using approved detergents and disinfectants with hot water of between 40-60°C.
- 5.4.4 The quality team should collect swab samples from the hatchery equipment and send them to the laboratory to check the quality of the cleaning and disinfection process.

5.5 Employees uniforms

- 5.5.1 All hatchery sections should have separate uniforms and underwear with specific uniform colours for each section to identify the employee.
- 5.5.2 All uniforms used by employees must be cleaned and disinfected in the hatchery laundry after the end of duty.
- 5.5.3 Staff are not allowed to use any personal clothing inside the hatchery nor are allowed to take out the work uniforms out of the hatchery.

5.6 Chick sorting area and sorting team

- 5.6.1 All faecal material must be removed, and the chick sorting area cleaned and disinfected, including the chick sorting tables and chick transfer belts, using approved detergents and disinfectants, after every hatch.
- 5.6.2 The quality team collects swab samples regularly and sends to the laboratory to check the quality of the cleaning and disinfecting process.
- 5.6.3 The sorting team must use PPE such as face masks, hair covers and hand gloves, etc before starting the sorting process and change them after the end of each flock batch.
- 5.6.4 The quality team should collect fluff (down feathers) samples from chicks from each flock and send them to the laboratory to check any disease or contamination.

5.7 Vaccination room, equipment, and vaccination team

- 5.7.1 The vaccination room must be cleaned and disinfected after each process to get good vaccine take.
- 5.7.2 Swabs from the room and air samples must be collected by the quality team and sent to the laboratory to check the quality of the cleaning and disinfecting process.
- 5.7.3 The vaccination equipment must be cleaned and sterilised at the end of every vaccination process for each flock and needles should be changed after every 1,500 chicks vaccinated.

- 5.7.4 The spray vaccine machine should be cleaned and sterilised at the end of each flock.
- 5.7.5 The quality team collects regular swab samples from the spray machine and sends to laboratory to check the quality of the cleaning and disinfecting process.
- 5.7.6 Used vaccine vials must be safely disposed by collecting in a trash bag with appropriate disinfectant poured into the bag to destroy any live /organisms.

5.8 Ventilation system

- 5.8.1 The ventilation system that includes air intake and air filters must be changed and cleaned following the recommendations from the manufacturers. This is done by the hatchery maintenance team.
- 5.8.2 The quality team regularly collects swab and air samples and sends to the laboratory to check the quality of air.

5.9 Input materials to hatchery

- 5.9.1 Any material entering the hatchery must be disinfected by fumigation or disinfection spray or ultraviolet device, depending on the type of the materials entering the hatchery.

5.10 Transport trucks (eggs, chicks)

- 5.10.1 The egg truck must be cleaned and disinfected before collecting the eggs from the farm and vice versa. It must be washed at its designated washing station.
- 5.10.2 The chicks' truck must be cleaned and disinfected before use, before transferring the chicks to the farm and vice versa. It must be washed at its own designated washing station.
- 5.10.3 The quality team collects swab samples from the trucks regularly and sends to the laboratory to check the quality of the cleaning and disinfecting process.

5.11 Hatchery waste

- 5.11.1 The waste disposal tank and truck must be periodically washed and disinfected at its designated washing station.
- 5.11.2 The quality team collects swab samples from the trucks regularly and sends to the laboratory to check the quality of cleaning and disinfecting process, and microbial load.

6.0 Biosecurity Standard Operating Procedures (SOPs) for Commercial Layer and Broiler Farms

6.1 Brooder House

- 6.1.1 Remove all cobwebs
- 6.1.2 Clean the house with water and detergents. Clean the floor, walls and the ceiling
- 6.1.3 Wash and clean every area with fresh water and sweep out the dirt.
- 6.1.4 Apply disinfectant diluted with water according to the manufacturer's recommendation to the areas already washed.
- 6.1.5 Spread dry litter in the form of sawdust or wood shavings in the brooder house before the arrival of the chicks.
- 6.1.6 Provide warmth in the brooder house by heating up the house with stoves, kerosene lamps or 200W electric bulbs.
- 6.1.7 Clean and disinfect chick feeders and drinkers before introducing the chicks to the brooder.
- 6.1.8 Use water-purifying agents to purify the drinking water for the birds.
- 6.1.9 Never use expired feed for day-old chicks. This can be checked by looking at the batch of the feeds.
- 6.1.10 Windows of brooder houses and other poultry houses should be covered with expanded wire gauze.

6.2 Rearing House

- 6.2.1 Cleaning and disinfection of the rearing house is the same as that of the brooder house.
- 6.2.2 Practice “**all-in, all-out**” system of production.
- 6.2.3 Dead birds should be quickly removed and disposed properly from the rearing house.
- 6.2.4 Feeding of chicks should be ad libitum, i.e., given always.

6.3 Footbaths

- 6.3.1 To ensure that the footbath remains wet/soaked, a piece of hard sponge is put in the bath.
- 6.3.2 Water is mixed with strong disinfectants, according to the manufacturer's recommendation and poured into the footbath.
- 6.3.3 The footbath water + disinfectant solution should be changed 2-3 times a day.
- 6.3.4 In the absence of footbath, a bowl (rubber or metal) is improvised and placed just before the entrance to the poultry house with water mixed with disinfectant.
- 6.3.5 Attendants must dip their feet into the footbath before entering poultry houses.

6.4 Truck tire dipper

- 6.4.1 Like the footbath, water is mixed with strong disinfectants, according to the manufacturer's recommendation and poured into the truck tire dipper for vehicles entering the farm.
- 6.4.2 The truck tire dipper solution should be changed routinely.

6.5 Vaccination

- 6.5.1 Vaccination should be done by trained and licenced animal health professionals.
- 6.5.2 Use of correct equipment, e.g. automatic syringes, should be ensured.

6.6 Laboratory analysis

- 6.6.1 Samples should be collected from dead birds for laboratory investigation.

6.7 Disposal of by-products

- 6.7.1 Droppings and other by-products should be regularly disposed of safely. Droppings for sale should be bagged and stored safely far away from poultry houses, to avoid contamination.

7.0 Biosecurity Standard Operating Procedures for Live Bird Markets

7.1 Build proper and adequate infrastructures and use proper equipment that can easily be decontaminated.

- 7.1.1 There should be a regular power supply.
- 7.1.2 The LBM should be designed properly based on functions.
- 7.1.3 The building should be properly constructed.
- 7.1.4 Ground level should slightly slope to drain water.

7.2 LBMs should be limited to birds of the same type and species. Construct separate markets for the sale of eggs, micro-livestock and wild birds.

- 7.2.1 Do not sell eggs, micro-livestock and wild birds in LBMs.

- 7.2.2 Cage birds by type and species.
 - 7.2.3 The location for sale of different species of birds should be different.
 - 7.2.4 Do not return unsold birds to farms or households.
 - 7.2.5 Do not buy live birds from LBM to take to the farm or household.
- 7.3 Food and goods should not be sold in LBMs and existing LBMs should be relocated and stand alone.**
- 7.3.1 The area for selling cooked food should be different from other activities within the market.
 - 7.3.2 Leveraging public-private partnerships, land should be allocated for building operational LBMs with facilities that ensure biosecurity.
 - 7.3.3 LBM should be easily accessible and reachable but not close to a residential area.
- 7.4 Ensure high standards of sanitation during slaughter and processing of live birds in the LBMs and discourage home slaughter.**
- 7.4.1 Encourage consumers to buy dressed and processed birds.
 - 7.4.2 Use stainless utensils for slaughter and processing.
 - 7.4.3 Fowl sellers and processors should wear dedicated personal protective equipment such as gloves, aprons and face masks.
 - 7.4.4 Fowls sellers and processors should regularly wash their hands after each activity.
 - 7.4.5 Tables and room floors/walls should be cemented or tiled.
 - 7.4.6 Ensure there are well constructed covered drainages and soak ways.
 - 7.4.7 There should be hand washing facilities at each compartment of the LBM.
- 7.5 Provide adequate floor space, water and feed and place live birds in metal or plastic cages that can easily be decontaminated.**
- 7.5.1 The number of birds in the LBM should not exceed its capacity.
 - 7.5.2 Live birds should always be in cages and not on the floor.
 - 7.5.3 Cages should not be stacked on each other.
 - 7.5.4 Place the appropriate number of birds per holding cage.
 - 7.5.5 Use metal or plastic cages to house live birds.
 - 7.5.6 Provide water to the birds always (*ad libitum*).

- 7.5.7 Provide live birds with adequate and balanced feed.
- 7.6 Ensure adequate potable water supply, and improve/upgrade the level of sanitation in LBMs.**
- 7.6.1 Construct a borehole and provide a pumping machine in the LBM.
- 7.6.2 Link the different parts of the LBM with pipes.
- 7.6.3 Provide water storage tanks.
- 7.6.4 Remove and properly dispose all dead birds, feathers and bird faeces after the end of each market daily activity by burning, burying or composting.
- 7.6.5 Quickly remove sick birds and move them to dedicated areas and cull them as soon as possible.
- 7.6.6 Regularly inspect birds for signs of disease.
- 7.7 There should be well-defined entry and exit manned gates to LBMs, and the flow of live birds, humans, vehicles and equipment should be in a one-way direction.**
- 7.7.1 Fence the LBM and provide a separate entry and exit gate that can be closed after trading.
- 7.7.2 Delegate a person to man each gate.
- 7.7.3 The different sections (compartments) of the LBM should be located to encourage one-way traffic flow from the less contaminated (with germ) to highly contaminated area.
- 7.8 There is a need to introduce rest days for all LBMs for the purpose of decontamination within the year. At such times, no activity in the LBM is allowed.**
- 7.8.1 The LBM should be fenced and separated from the main market.
- 7.8.2 Build LBMs in different locations from the major market.
- 7.8.3 Rest and decontaminate-stalls, cages, etc, in LBMs once a month for LBMs that operate daily.
- 7.9 Government officials, fowl sellers and processors in charge of LBMs should be regularly trained on biosecurity, and regular awareness campaigns should be conducted on the need for biosecurity in LBMs.**
- 7.9.1 All actors involved with LBMs should be trained on different aspects of biosecurity.
- 7.9.2 Animal Health Workers should regularly conduct disease surveillance.

- 7.9.3 Fowl sellers should keep records of sources of birds, sick birds and those bought and sold.
- 7.9.4 The records should be checked regularly to ensure compliance.
- 7.9.5 Fowl sellers should be organized into co-operatives and be involved in the management of the LBM with their responsibilities outlined.
- 7.9.6 There should be a biosecurity committee for the market.

7.10 Introduce regular insect and rodent control programs in LBMs.

- 7.10.1 Ensure that the bird droppings and other solid wastes are evacuated from the LBM daily.
- 7.10.2 Keep the market as dry as possible.
- 7.10.3 Apply insecticides and rodenticides once a month during the rest days.
- 7.10.4 Avoid spilling poultry feed.
- 7.10.5 Properly design the LBM and ensure good ventilation.
- 7.10.6 Ensure that there are no areas where insects and rodents can hide.

7.11 Provide separate areas for loading, selling and processing in LBMs.

- 7.11.1 Designate loading and off-loading area.
- 7.11.2 Separate the stalls from the processing area.

8.0 Biosecurity Standard Operating Procedures for Low-level/Live Bird

Market Processors

In view of the importance of biosecurity for processors and the need for the production of wholesome meat, the following are the SOPs for the different stages of the operations.

8.1 Live birds

- 8.1.1 Separate birds into holding cages/boxes by their species.
- 8.1.2 Process birds on the basis of **first in, first out**.
- 8.1.3 Keep birds off feed (water must be given) for at least 4 hours to minimise contamination with visceral contents, including faeces during processing.
- 8.1.4 Write down the date, name, address, telephone number of the source of birds (farm); and number, species, age of birds received.
- 8.1.5 Write the date, species, number of birds processed.
- 8.1.6 Identify sick birds, isolate immediately, cull bird(s), kill, wrap in polyester bags, burn incinerate, report to nearest veterinary authority, write dates and species.

8.1.7 Train processors once every year.

8.2 Personal Protective Equipment (PPE)

8.2.1 Put on coveralls and wash PPEs after use.

8.2.2 Put on head cover.

8.2.3 . Put on footwear.

8.2.4 Put on hand gloves

8.2.5 Put on facemask.

8.2.6 Wash PPE with detergent, rinse and sun dry.

8.3 Water

8.3.1 Change water for scalding after dressing 30-40 birds.

8.3.2 Rinse/wash carcasses under flowing potable water.

8.3.3 Dispose used water properly.

8.4 Equipment

8.4.1 Wash the worktable daily with detergent and disinfect before and after use.

8.4.2 Wash knives with detergent and rinse with potable water.

8.4.3 Remove feathers and dispose properly in the incinerator.

8.4.4 Remove and dispose of all internal wastes properly in the incinerator.

8.5 Slaughter

8.5.1 Slaughter only healthy birds.

8.5.2 Slaughter only one species per processing point.

8.6 Environment

8.6.1 Fence around the area of processing

8.6.2 Regularly clean the environment.

8.6.3 Fumigate the area with recommended disinfectant/insecticide at the end of the day's work.

9.0 Biosecurity Standard Operating Procedures for Organized Poultry

Processors

9.1 Workers

- 9.1.1 Shower before and after processing
- 9.1.2 Wear appropriate PPE: coveralls, head cover, hand gloves, face mask, goggles, etc.
- 9.1.3 Wash PPE with detergent, clean and disinfect, before and after each use.

9.2 Equipment

- 9.2.1 Wash, rinse and disinfect all work surfaces and equipment (tables, basins, knives, etc).
- 9.2.2 Sterilise all packing materials with UV light before use.

9.3 Birds

- 9.3.1 Select and process only healthy birds.
- 9.3.2 Transport birds in plastic crates.
- 9.3.3 Rest birds for not less than 30 minutes.
- 9.3.4 Bleed (slaughter) for at least 10 minutes.
- 9.3.5 Scald with water temperature at 50-55°C for 20-30 seconds.
- 9.3.6 Plucking - Transfer scalded birds into the picker (de-feathering machine) in multiples of 5 to 10.
- 9.3.7 Eviscerate - Keep organs away from the whole processed poultry to avoid contamination.
- 9.3.8 Wash and rinse at least 3 times.
- 9.3.9 Strain for at least 30 minutes.
- 9.3.10 Weigh each carcass and sort accordingly.
- 9.3.11 Package and label properly
- 9.3.12 Freeze - Blast freeze and refrigerate at -18°C,

10.0 Biosecurity Standard Operating Procedures for Transportation

10.1 General transportation procedures for poultry, poultry products and poultry By-products

- 10.1.1 Limit access to the transportation area to authorised personnel only.
- 10.1.2 Ensure appropriate/specialised vehicles are used for transporting.

- 10.1.3 Ensure the vehicle is in good working condition.
- 10.1.4 Inspect the transportation vehicle to ensure it is clean and disinfected to prevent cross contamination.
- 10.1.5 Maintain detailed records to track the movement of live birds, poultry products, and by-products for traceability purposes.
- 10.1.6 Ensure that all necessary permits, licenses, and documentation required for the transportation of poultry, poultry products and poultry by-products are available and up to date.
- 10.1.7 Outline responsibilities for different personnel roles (e.g., drivers, loaders, inspectors, etc) to ensure adherence to biosecurity protocols.

10.2 Transportation procedures for poultry (live birds)

- 10.2.1 Ensure proper packaging and securement to prevent injury during transportation.
- 10.2.2 Ensure proper ventilation to maintain air quality and minimise stress on the poultry.
- 10.2.3 Birds should preferably be transported in the night to minimise stress.
- 10.2.4 Prevent unauthorised access to vehicles carrying the birds during transit.
- 10.2.5 Develop and communicate emergency protocols for situations that may compromise biosecurity such as accidents, breakdowns, or adverse weather conditions.
- 10.2.6 Conduct a final visual inspection of the birds before departure to assess their health and condition.

10.3 Transportation procedures for poultry products

- 10.3.1 Ensure proper packaging and securement.
- 10.3.2 Ensure cooling systems in the vehicle are functional.
- 10.3.3 Prevent unauthorised access to vehicles during transit.
- 10.3.4 Develop and communicate emergency protocols for situations that may compromise biosecurity such as accidents, breakdowns, or adverse weather conditions.
- 10.3.5 Conduct a final visual inspection before departure to assess the condition of the products.

10.4 Transportation procedures for poultry by-products

- 10.4.1 Ensure proper packaging and securement, i.e., bags are in good condition and properly sealed to avoid leakages.
- 10.4.2 Prevent unauthorised access to vehicles during transit.
- 10.4.3 Develop and communicate emergency protocols for situations that may compromise biosecurity such as accidents, breakdowns, or adverse weather conditions.

10.4.4 Conduct a final visual inspection before departure to assess the condition of the by-products.

10.5 Loading procedure for poultry

10.5.1 Ensure proper packaging and securement, i.e., bags are in good condition and properly sealed to avoid leakages.

10.5.2 Prevent unauthorised access to vehicles during transit.

10.5.3 Ensure that loading equipment is in good condition and free from sharp edges or other hazards that could injure the birds.

10.5.4 Ensure that the loading area is clean, dry, and free from any potential contaminants.

10.5.5 Avoid loud noises, sudden movements, or other stimuli that could startle or stress the birds.

10.5.6 Ensure that birds are loaded in a manner that minimises overcrowding and allows for adequate ventilation and comfort.

10.5.7 Handle the birds carefully to prevent injuries, focusing on supporting their legs and bodies during lifting and placement.

10.5.8 Ensure that crates, containers, or other packaging materials used for transportation are clean, disinfected and appropriate for the poultry being transported.

10.5.9 Once loaded, secure the birds in place to prevent shifting or jostling during transit.

10.5.10 Double-check all latches and fastenings to ensure they are properly secured.

10.5.11 Clean and disinfect loading equipment and the loading area following the completion of loading activities.

10.6 Loading procedure for poultry products and by-products

10.6.1 Load poultry products and by-products in a secure and organized manner to prevent shifting/spillage during transportation.

10.7 Handling during transportation

10.7.1 Avoid sudden stops or sharp turns that could cause stress or injury to the poultry.

10.7.2 Ensure that poultry are provided with adequate space, airflow, and protection from adverse weather conditions.

10.7.3 Monitor the condition of the poultry periodically during transportation to identify any signs of distress or health issues.

10.7.4 Conduct a post-loading inspection of the transport vehicle to ensure all birds are securely loaded and ready for transit.

10.7.5 Confirm that all biosecurity protocols have been followed before departure.

10.8 Unloading procedures for poultry

- 10.8.1 Coordinate personnel to safely unload live birds from the transport vehicle using appropriate handling techniques.
- 10.8.2 Ensure that unloading areas are clean, disinfected, and free from potential hazards.
- 10.8.3 Ensure that poultry are provided with adequate space, airflow, and protection from adverse weather conditions.
- 10.8.4 Perform a thorough health inspection of the birds upon unloading to assess their condition.
- 10.8.5 Look for signs of illness, injury, or stress, including abnormal behaviour, respiratory distress, or lameness.
- 10.8.6 Separate any birds exhibiting symptoms of disease or distress from the rest of the flock for further evaluation.

10.9 Unloading procedures for poultry products and by-products.

- 10.9.1 Handle poultry products and by-products with care during unloading to prevent damage or contamination.
- 10.9.2 Ensure that unloading areas are clean and disinfected.
- 10.9.3 Dispose any waste materials (e.g., bedding, packaging) in accordance with applicable regulations and biosecurity protocols.

10.10 Post-transportation procedures for poultry

- 10.10.1 Upon arrival at the destination, park the transport vehicle in designated areas away from other poultry housing units.
- 10.10.2 Avoid overcrowding and minimise stress during unloading by moving birds calmly and efficiently.
- 10.10.3 Implement quarantine measures for newly arrived birds to prevent the potential spread of pathogens to the existing flock.
- 10.10.4 Monitor quarantined birds closely for signs of disease and implement appropriate biosecurity measures to prevent transmission.
- 10.10.5 Clean and disinfect the transportation vehicle and equipment following use.
- 10.10.6 Use approved disinfectants and follow manufacturer's instructions for proper application and contact time.

10.11 Post-transportation procedures for personnel and vehicle used to transport poultry products and by-products

- 10.11.1 Conduct post-transportation inspections to identify any maintenance or repair needs.

- 10.11.2 Review transportation records and documentation to identify areas for improvement and ensure compliance with regulations and standards.
- 10.11.3 Emphasise the importance of personal hygiene practices among personnel involved in post-transportation procedures.
- 10.11.4 Provide access to handwashing facilities, hand sanitizers, and personal protective equipment (PPE) as needed to prevent cross-contamination.

11.0 Biosecurity Standard Operating Procedures for Input Suppliers

11.1 Feed Millers

- 11.1.1 Raw materials must be checked for contamination before transporting to the feed mill.
- 11.1.2 Raw materials must be cleaned and checked for quality e.g. colour, texture, moisture, odour to avoid deterioration.
- 11.1.3 Raw materials must be checked for specification for nutrient composition.
- 11.1.4 Samples of the finished feed should be sent to the laboratory for analysis.
- 11.1.5 An acceptable limit of 20 ppb (parts per billion) of aflatoxin levels in the feed of animals for human consumption should not be exceeded.
- 11.1.6 Finished feed must not be allowed to remain in the store after 3-4 months.
- 11.1.7 Feed mills must use appropriate new bags for all products at all times. Bags must not be recycled.
- 11.1.8 Stack bags of raw materials on hard wood to avoid deterioration and rancidity that will affect the health of the birds.
- 11.1.9 Daily cleaning of the operation area must be observed to prevent vermin from attacking the feed.
- 11.1.10 Workers must change into PPE at the cloak room before entering the operation area.
- 11.1.11 Cleaning of machines must be observed to clear feed deposits on the machine after crushing.
- 11.1.12 On-farm feed mill must strictly service its farm only.
- 11.1.13 The distance of siting feed mill away from poultry production activity must be observed to prevent disease incidence and curtail spread in the case of outbreak:
At least 200 m away from poultry production activity in the case of On-farm feed mill, and 2 km away from poultry production activity in the case of Commercial Toll feed mill.

11.2 Input Suppliers of drugs, vaccines, biologics and equipment

- 11.2.1 Vaccines, drugs, biologics, and equipment should be transported to the poultry farm in a clean vehicle, vaccines in particular should be conveyed in a vehicle that has cold chain facility to maintain its potency.

- 11.2.2 Vehicles used for the conveyance of these items should be washed and dried before and after use.
- 11.2.3 To avoid indiscriminate use of veterinary drugs, vaccines and biologics veterinary personnel and trained animal health workers should prescribe and administer to the birds.
- 11.2.4 Vaccines, drugs, and biologics used in the farm should be stored appropriately stored in clean, , and well-ventilated room to maintain its quality.
- 11.2.5 Footbaths with disinfectants should be placed at all entrances of the compound to prevent entry of pathogens.
- 11.2.6 Expiry dates of vaccine, drug and biologics should be checked before it is administered.
- 11.2.7 Attendants having infectious disease or suspected to be affected by an infectious disease or with open wound should not be allowed to administer drugs, vaccines and biologics to birds. It could affect the quality of these products or cause transmission of disease to the birds, especially if it is a zoonotic disease.
- 11.2.8 Poultry attendants should be kitted with appropriate PPE while working in the farm.
- 11.2.9 After vaccination, the vaccine bottles should be disinfected, and incinerated. Left over vaccines should be flushed in the toilet.
- 11.2.10 Installation of equipment should be done before stocking.
- 11.2.11 Damaged equipment should be removed before it starts affecting the health of the bird.
- 11.2.12 Equipment and tools must be handled with care. They are not to be thrown around the farm so that it does not injure any worker or bird.

12.0 Training and communication

- 12.1 Schedule regular reviews of all the SOPs for maintenance of biosecurity in the poultry value chains to ensure they remain up-to-date and effective.
- 12.2 Conduct regular training sessions to educate poultry value chain stakeholders on biosecurity protocols and emergency response protocols and ensure that emergency contact information is readily accessible.
- 12.3 Maintain open communication channels between poultry value chain stakeholders and regulatory authorities to address concerns or issues related to biosecurity protocols.