APPENDIX 2

BROILER MANAGEMENT STANDARD OPERATING PROCEDURE

The broiler standard operating procedure is framed based up on the field observations & continuous evaluation of the existing practice of the integrator. The broiler SOP is targeted to achieve the goal of feed conversion ration 1.80 and mortality of 3.5%.

Shed Selection

- The farm location should be ideal to poultry production.
- The farm should have good road facility for easy transportation.
- The direct of the farm may be east – west direction
- Water quality / hardness below 750 ppm, Ph 6.0 to 8.5
- Poultry breadth 25 feet +/- 10 feet, shed should be at least minimum of six inches above the ground level.
- Foot pit with disinfectant for better biosecurity in the shed entrance
- Separate feed storage room near to the shed with stacking arrangement for feed bags.
- Required water tanks, one for medication and another one for drinking water with the capacity of 500 litres for every 1000 square feet.
• Outer side curtain for the entire length of the shed for both sides, inner side curtain for 33% of the shed for tent brooding. White or yellow colour curtains to be used for better lighting.

• Provision of death pit for the daily disposal of dead broiler birds.

• Partition for every 500 square feet

• Commercial electricity service, 11 or 16 watts CFL bulb or 40 watts tube light @ 1 No for every 400 square feet

• Preferable flooring of the farm is cement

• Minimum phone facility is required in order to communicate all supplies

• Water source either bore well or well within the permissible level.

• Side mesh hole size above 1 inch and mesh height above 6 feet for free ventilation.

• Small size one heater for 500 chicks, if big scale1 number for 1000 chicks.

• Water tanks placed inside the shed will not be exposed to direct sunlight and hence less heat radiation.

• There should not be rearing of domestic animals / birds very near to the shed.

**Essential Equipments required for poultry farming**

Feeder (1 per 50 Chicks), Water Drinkers (1 per 50 chicks), Cleaning Set (Flame gun, etc.), Health care set for chicks, Lighting system, Brooders (Gas brooder), Heaters, Ceiling fan, Side curtains, Vaccine injector, Feed storage trays, and Manure storage sheds/wells.
Shed Cleaning and Disinfection

Proper cleaning and disinfection of environment and farms, safe disposable of wastes are essential for maintaining optimal health status of birds. This in turn results in faster growth rate, lower mortality, better feed efficiency, high day gain and lower Production cost. Susceptible health conditions of the birds will not only cause heavy mortality but also will lead to slow growth rate, high feather growth, poor feed efficiency, low day gain, high production cost and severe economic losses. The following procedure is mandatory for cleaning the farm, equipments and surroundings.

• Immediately after the birds are lifted, empty the feeders, disconnect the drinkers and remove them out of the shed.

• Clean the roof, sidewalls, wire mesh etc from spider net, dust etc, always clean the shed from top to bottom.

• All the litters are to be scrapped and removed. It is better to sell the litter, should be carried to a place at least 1000 feet away from the farm premises opposite to the direction of the wind.

• Feathers and other waste materials in and around the Farm should be collected and burnt.

• In case of heavy mortality and infection in the previous batch, the farm should be treated with direct flame using Flame gun.

• Malathian or creosote solution spray can be used to control ticks and mites.

• Floor has to be washed with pressurized water.

• Floor has to be washed with detergents.

• Wash the side and ceiling curtains in water with detergents.
• Clean the pipe line with hydrogen peroxide 5%

• Soak the floor for 12 hours, using 2 kg of washing soda with 50 litter of hot water for every 1000 square feet

• Soak the floor for 12 hours, using 1 kg of Caustic soda with 50 liters of water for every 1000 square feet

• Repair the holes and crevices in floors, roofs and walls to prevent the entry of wild birds, rodents, etc.

• Shed repairing if any has to be carried out before disinfectant spray.

• Clean the equipments with detergents and remove the scales in the drinkers using hydrochloric acid.

• All the disinfected equipments should be kept outside the farm for sundry.

• Spray in and around the shed to be carried out with recommended disinfectant.

• Formalin Spray for every 1000 square feet formalin spray 5% (500 milliliter formalin + 10 liters of water)

• Formalin spray for mud floor and thatched roof for every 1000 square feet 10% (1000 milliliter formalin + 10 liter of water)

• White Wash the walls and floors using Limestone.

• Clean and mop the bulbs and electrical repair works should be carried out.
Chick quality assessment

- Healthy chicks will have closed, healed navels and clean vents.
- The unfeathered skin over the legs will be bright and smooth.
- Bright, alert and active.
- Uniform size, colour, clean, dry and fluffy appearance.
- They should be free of congenital deformities or wounds.
- As per international poultry standards the minimum chicks weight must be 42 grams and above.

Brooding management

After the arrival of chicks the temperature & humidity has to be maintained between 73 °F and 88°F. If the temperature rises above the maximum range stop heating and open the side curtains. If the temperature falls below the minimum range then close the curtains and start heating.

Space management

Space acts as a major determinant factor for good growth of birds. Generally per bird one square feet is needed and it will vary depending upon the age and season. For the day old chicks minimum 0.22 Square feet per chicks is required. For birds aged 22 and above 1 Square feet per chicken is required.

Curtain management

- Curtain one side screens (laminated polythene) on both sides of the shed for entire length should be made ready either white or yellow colour.
• The torn side screen & worn out roof should be repaired during the shed preparation.

• Generally, in brooding period the side curtains should be more tightly sealed to preserve heat.

• This closed environment of the broiler farms may result in reduced air circulation, accumulation of ammonia and poor air quality, which can causes low feed consumption, reduced growth rate, loss of cilia in trachea. In such circumstances, when you feel uncomfortable open the side curtains and give fresh air.

• Side curtain and false roofing should be maintained for 2 weeks period

• To prevent the cold shock, avoid suddenly lifting of the side screen fully at a time.

**Lighting management**

• The light rays stimulate to produce various hormones required for the growth.

• Light is essential to find the feeders, drinkers, brooders, etc.,

• Light will provide more time for the birds to eat and grow faster.

• Bright Light provides the chicks to achieve a Good Start.

• The efficiency of lighting programme on broiler depends on, the most commonly recommended lighting programme will be 24 hours lighting.
• The intensity of light is measured in lux units using a lux meter. For day old broiler chicks, an intensity of 100 lux units at bird’s eye level is recommended. This can be achieved by providing one 100 watt round bulb at 2 feet height from the floor level for every round brooding.

• After brooding an intensity of 20 lux is required for birds which can be achieved by providing one 40 watt tube light at 6 feet height.

• Light Intensity should be uniform throughout the farm.

• A Tube light emits around 60 lux for 400 square feet at 6 feet height.

**Litter management**

• Litter is defined as bedding material, which acts as an absorbent that helps to facilitate evaporation of moisture and gases from facial material.

• Litter is a soft, fibrous material which absorbs moisture and harmless to birds.

• Sawdust, rice husk, coir pith (Coconut dust) are common litter materials. Fresh litter should be used for rearing new batch of birds.

**Procedure for vaccination**

• Vaccination is an effective means to prevent and/or reduce the adverse effects of specific diseases.
• The main reason for vaccination of poultry is to reduce the losses due to morbidity and mortality caused by infectious agents

• The vaccination must be given well in advance of any natural exposure or infection

Water management

• The quality parameters include color, turbidity, PH, bacterial & algal contamination, nitrate & nitrite levels and other mineral contamination.

• PH level is expressed in water’s acidity or alkalinity. Optimum PH is from 6.8 to 7.3 for PH above 7.3 add acetic acid.

• Acidic water has PH less than 7 and alkaline water has PH greater than 7.

• Deep bore water generally will be highly alkaline. Alkaline PH favours the growth of pathogens.

• Water PH matters as it has direct impact on microbial load.

• Proper water sanitation will not only reduce the level of pathogens but also improves the digestion of the feed.

• Always provide sanitized water to the birds.

• Poor water quality reflects in wet droppings, poor FCR, high ammonia levels in the shed and reduced body resistance.

• One single ecoli organism can multiple into 24 trillion in 24 hours.

• Contaminated lines can also reduce feed intake and effectiveness of water additives, such as vaccines and medicines.
• The microbial load should be less than 10, preferable PH range is 6.8 to 7.3 and the preferable PPM is below 500.

• Use the specified water sanitizer as per the recommendation of the manufacturer.

Feed management

Feed is the important input given to the broiler bird. Feed constitutes more than 72 % of the total production cost. Feeding program starts with pre broiler starter up to 550 grams body weight gain, broiler starter up to 1100 grams body weight gain and broiler finisher up to marketing of broiler. It is very important to take more care in the feed utilization and completely reducing the feed wastage by adopting the proper methods of feeding practices like slot adjustments, utilization of grills, alignment of the feeders, height adjustments to the crop level of the birds etc, as per the recommendations below

Form of feed

• Generally, three varieties of feed viz., Mash, Pellet and Crumble Feed.

• Pellet and Crumble feed should not contain more than 10% of powder.

• Generally the birds like coarse material and dislike powdery feed. The feed should contain 90% coarse material and less than 10 % powdery feed.

• Verify feed quality for every consignment in terms of coarse material, fungus, odour, powder, size, etc...

• Ensure proper feed planning and consumption pattern.

• Chicken have the habit of scratching and billing feed out of the feeder, so the damage of feed is to be avoided.
Procedure for feed storage

- Feed bags should be stacked with a gap of 1 feet from the walls.
- Feed bags should be stacked with a gap of 1 feet from the ground using wooden pallets or hollow blocks or square stones etc.,
- To avoid heat generation and cake formation feed bags should be stacked not more than 5 bags in a row.
- First in First out system to be followed for feed distribution.
- Feed should be indented for maximum of one week only.

Reducing Feed Wastage

- Sufficient number of feeders (50 chicks: 1 feeder) ensures adequate feed intake and uniform growth and prevents possibility of cannibalism and other crowding of birds near a feeder when feed is placed.
- Feeder height to be adjusted according to the birds’ growth.
- Placement of more than 1/3 feed in the feeder pan results in wastage. Feeders may be filled, if necessary, more frequently. At least once a week feeder may be cleaned to remove cake, dust in the feeder.
- Rodent control methods should be carried out periodically.
- Do not pour feed directly from the gunny or buckets. Carry feed in buckets and then provide feed using specified scoops.
- Open bags should not be sent to other farms. Fresh bags should be thoroughly disinfected with parent acetic acid and then only
sent. The receiving farm also should give disinfection spray with parent acetic acid and then only use it.

- Ensure to minimize the return feed quantity and also avoid feed transfers by proper planning.
- There is a huge economical loss to poultry industry due to rodents.
- Rodents (Rats) consume, waste and contaminate the feed and water.
- Rodents destroy insulation material and pose a real fire hazard by biting on electrical wires.
- Rodents living in the farms are most active at dawn and dusk.
- Mice (Rats) have been shown to be common carriers of all diseases.
- Each Day a single rat consumes 30g feed and mouse 2 to 3 Kg per day.
- A single rat will consume up to 60ml of water each day.
- Spillage of feed also attracts the rats.
- A Single rat contaminates feed 20,000 fecal in a year.
- Within a year, about 15,000 rats can be multiplied from a single pair.
- Proper Sanitation around the farm, removing debris, old equipment etc, and keeping grass and weeds at 3 to 4 cm height reduces chances of infestation.
Summer management

- Erecting thatched roof 6 feet height on both sides of the shed reduces $90^\circ$ F internal temperatures.
- It helps cool air to enter in the farmhouse.
- Care has to be taken that the thatched roof should not disturb movement of air from outside to inside the shed.
- Cultivation of grass outside the shed up to 6 inches height reduces the radiation heat.
- Clean the spider web inside mesh frequently, which will increase 20% airflow inside the shed.
- Water should be sprayed around the shed for providing cool air.
- Grass / Agro waste / Thatches spread to 3 inches thickness on roof shall lower the temperature up to $50^\circ$ to $90^\circ$ F (OR) White washing of tiles 10 kg limestone + 2 kg cement + 25 liter water reduces $9^\circ$ F heat inside the shed (OR) Continuous sprinkling of water on the roof between 10 AM & 4 PM reduces $9^\circ$ F.
- Inside of farm house, don’t disturb the birds in the day time (Catching, holding, weighing, vaccination etc).
- Promote gentle walking inside the farms, which helps to motivate birds to drink more water & to reduce heat in the lying area and between the birds.
- Remove the wet litter and cake formation.
- Provide 2” husk instead of 3” to reduce dust and heat in the farm.
- Whenever spraying water use 1 to 2 ml Acetic acid/liter of water.
• Growing trees and creepers on roof reduces the in house temperature by 5°F and radiation and increase the humidity up to 10 to 15%.

• Wet gunny spread along the side mesh gives better cool environment to chicks.

• Provide gunnies at the side with drip water to get cool breeze inside farm

• Ceiling fan for every 600 Square feet reduces 90°F. The height of the ceiling fan to be around 6 feet from the ground level of farm.

• White painting of water tanks (OR) Cover the tanks with thatched roof or straw and keep it wet in daytime by frequently spraying the water.

• Keep adequate gap between roofing and pipelines.

• Flush water line 6 times in peak summer time, with a maximum gap of 45 minutes once.

• Drinker pipeline may be fully covered with Wet gunny clothes to reduce the water temperature.

• Remove the drinker filter from all drinkers for free flow.

• Keep additional water tanks with water for emergency use.

• Put your upper palm on the exhaust pipe line flush the water till you feel coolness.

• After flushing remove the existing water in the bell drinkers at least 2 to 3 times in a day, to motivate the birds to take fresh cool water.
• Ensure that all sheds, tanks and pipe lines are protected from direct sunlight. It is advisable to erect water pipelines under the ground so that it is not affected by the outside temperature.

• Provide more number of drinkers. Usually 20% excess numbers are required above the standard requirement.

• Even water basins may be used as extra drinkers.

• Avoid spillage of water, which helps to reduce the cake formation and chronic respiratory disease problems.

• Auto drinker should be fixed from 2nd day onwards.

• The water level in the drinker should be up to the brim level so that the birds not only access drinking water easily but also the wattles and comb will get wet and the body temperature will get reduced.

• Motivate the birds to take more feed in cool hours.

• Feeding should be done in the early morning.

• Increase the frequency of feeding time.

• Wet feeding will increase European Efficiency Factor around 25 points. Add 20 liters of water in 80 kg feed.

**Winter management**

• Chicks Transportation should not be more than 8 hours. The supply of chicks in winter should be in the day time, Curtain / side screens (laminated polythene) on both side of the shed for entire length should be hung.

• The torn side screen & worn out roof should be repaired during the shed preparation.
• Feed should be carried in fully closed vehicle to avoid getting wet. Feed bags should be stacked with a gap of 1 feet from the walls, Feed bags should be stacked with a gap of 1 feet from the ground using wooden pallets or hollow blocks or square stones etc.,

• Ceiling curtains must to be made for the entire brooding area.

• Brooding temperature is to be maintained for at least two weeks.

• Round brooding is better than part brooding and brooding should be 12 feet width in diameter & height should be one and half feet for 350 chicks.

• A Hygrometer should be there for each shed. It should be one and half feet above the ground level and one and half to 2 feet away from the brooder.

• Recommended Antibiotics; Vitamins, Electrolytes or sugar and Feed should be kept ready.

• Keep ready with brooding equipments such as gas brooder or pot brooder, Newspaper, chick drinker and chick feeder.

• Brooding area should be made for 0.5 square feet / chick and round brooding for 0.22 Square feet and News paper for paper feeding should be spread in the entire round brooding and Switch on the gas brooder or coal pot to preheat the brooding area 6 hours before the arrival of chicks.

• Fill the chick drinkers about 4 hours before chicks’ arrival. This allows time for the brooder heat to warm the water.
• The drinkers should be filled with clean water and placed in position near the brooders at the same time that the room heating is turned on. This will ensure that the water will be between 72°F to 77°F and will not chill the chicks.

• Check the light intensity in the brooding area so that easily chicks access the feeders and drinkers.

• 30% of the space should be occupied by the cycle tyre feeders & bell drinker feeding in addition to paper feeding. It should be 100 % from day 1 onwards.

• The chillness of the chicks can be felt by keeping the chicks feet on the backside of our palm or face.

• Maintain temperature 86 to 88°F throughout the brooding area.

• Ensure clean, sanitized water easily access to the chicks.

• Chicks first start to feed and tend to eat good meal, which also fill the crop.

• Plate feeding or chick feeder feeding shall be implemented as supplementary from 2nd day onwards.

• Dip the beak of the chicks in the chick drinker for at least 10% of the chicks to learn to drink.

• Poor 7 day weight is obtained due to the chicks being unable to find feed or water and poor maintaining of temperature and RH%.

• Withdrawal of heat should be gradual. Sudden withdrawal of heat leads to huddling and unevenness
• In winter season, generally brooding heat to be maintained 24 hours for 1 to 7 days and nighttime from 8th day to 14th day. However maintain the heat according to the prevailing temperature.

• After introducing auto drinker on day 4, Chick drinkers to be taken out gradually.

• Spray a mixture of wood ash and fertilizer grade super phosphate in the ratio of 4:1 at the rate of 20kg per every 1000 square feet before raking the litter to prevent ammonia release.

**Biosecurity guidelines**

Biosecurity is the term used to describe an overall strategy or succession of measures employed to exclude infectious diseases from a production site. The key points to be implemented in the poultry farm.

• Limit nonessential visitors to the farm. Keep a record of all visitors and their previous farm visits.

• Farm supervisors should visit the youngest flocks at the beginning of the day and working by age to the oldest flock for the last visit in that day.

• Avoid contact with poultry outside of the organization.

• If equipment must come from another farm it should be thoroughly cleaned and disinfected before it comes onto the farm.

• Provide wheel dips or wheel spraying facilities at the farm entrance and allow only necessary vehicles on site.
• Farms should be fenced and Keep doors and gates locked at all times.

• Absolutely no other poultry should be kept on the same farm as your poultry unit. Farm animals other than poultry should be fenced separately and have a different entrance from the poultry farm enterprise.

• No pet animals should be allowed in or around the poultry housing.

• All farms should have a vermin control plan which includes frequent monitoring of rodent activity. Adequate supplies of rodent bait must be maintained.

• All houses should be vermin proofed and all surrounding area around the poultry house should be free from vegetation, debris and unused equipment that could harbor vermin.

• Clean up feed spills as quickly as possible and fix any leaking feed bins or feed pipes because spilled feed attracts vermin to the poultry house.

• Farms should have toilet and hand washing facilities separate from the poultry house.

• A dedicated changing facility for protective clothing and footwear should be sited at the farm entrance.

• Provide hand sanitizing facilities at the entrance to each house.

• Provide well maintained footbaths at the entrance to each poultry house.

• Clean footwear before using footbath to remove organic material, which could inactivate the disinfectant.
• The choice of disinfectant for the footbath needs to be one that has a broad spectrum of activity and be fast acting because of limited contact time.

• Footbaths should be covered.

• Single age broiler farms are highly recommended to reduce the cycling of pathogens and/or vaccine agents within the farm.

• Birds should be placed from similar age parent flocks of the same vaccination status and Depletion of birds should be complete before arrival of new chicks.

• Catching crews should be provided with protective clothing. Equipment such as coops/crates and forklifts should be washed and disinfected before entry to the farm.

• Adequate downtime between flock placements is essential.

• Drinking systems should be drained and flushed with an approved disinfectant before flock placement. Ensure that the system is again flushed with clean water before placement to remove any residue.

• Test water at least yearly for mineral levels and microbial quality.

**Records keeping**

Accurate record keeping is essential to monitor the performance and profitability of broiler operations of the farm. Daily records should monitor in terms of feed consumption, water consumption, maximum and minimum temperature, mortality, medication and vaccination and feed, gas, litter deliveries, etc. Record on a flock basis in terms of Electricity usage, Gas/oil usage, stocking density, Feed samples which should remain from each load
delivered and stored in airtight, vermin proof containers, Feed Consumption, Body weights and FCR.

**Note:** Suggested Management guide based on integrators recommendations. Management practices should be worked out in consultation with local poultry consultant because requirement differs from area to area. This management guide cannot use as universal management guide for all the area.