

## **Broiler management**

Broiler performance can be considerably influenced by genetics, management, nutrition, and health.

### **Stock management:**

***Rearing:*** “ don’t wait until chicks arrive”

The key to success in rearing broilers lies in the systematic and efficient management program starting well before the chicks arrive on site. Giving the birds a good start provides the basis for an efficient, profitable crop of broilers:

- A. Make sure that equipments, housing and its surrounding areas are thoroughly cleaned and disinfected to safeguard against disease carry-over.
- B. Shavings should be level in the brooding areas. Uneven litter creates uneven floor temperatures causing groups of chicks to huddle in pockets of shavings or under equipments, depriving themselves of feed and water at a critical time during maximal growth period.
- C. Check that brooders are working correctly and then commence pre-heating 24-36 hours before the chicks arrive depending on weather conditions. This will help to ensure the shavings are warmed through and the air temperature is correct when the chicks are delivered.
- D. Provide clean water at room temperature immediately before delivery, using two drinkers or their equivalent per 100 chicks.
- E. Do not seal the house completely when using the brooders, allow limited fresh air into the house, but avoid draughts.
- F. Starter crumbs should be dust free and of consistent, correct size.

G. Do not place feed and water directly under or too near the brooders as chicks need freedom to move around.

H. Use maximum and minimum thermometers to check brooder and house temperatures.

### **Chick quality:**

Chicks should be alert, lively, and free from any obvious deformities. Use the one age / one site (all out/all in) program.

- *All-in /all-out system:*

Meaning that all chicks are placed in the house (or houses) at one time, and sometime later, all are removed out at one time. Another group of chicks is not to be placed in the house (or houses) until all the older birds are moved out and the premises are cleaned. This provides a period with no chicks within the enclosure, thus breaking any cycle of disease infection.

### **Chick placement:**

Before placing chicks under the brooder, make a final check to ensure that all brooders are working correctly, drinkers are free of litter, and feed is available in sufficient amounts on chick trays, box lids, polythene or paper sheeting. Leave chicks to settle for 1 to 2 hours. Then thoroughly check that all chicks have found feed, water, and the heat source.

The cleaning process must involve the following:

- Remove all old litter: used litters should be removed from the poultry house, then hauled away from the premises.
- Clean and scrub the house: all loose debris must be taken from the building, and the floor scraped clean. Any slats or wire should be scraped. Next, a pressure sprayer should be used to thoroughly

wash the interior of the house. Following this, it will be necessary to disinfect the entire inside of the building. Allow the house to dry.

- Clean the equipments: all equipments must be scraped, washed, and disinfected. Dip the smaller items in a disinfecting solution.
- Fumigate: the house and the equipments should be fumigated, using 3 X concentration of formaldehyde gas.
- Clean and fumigate bulk feed bins: these should be washed and disinfected, then fumigated at 3 x strength formaldehyde.
- Treat dirt floors: spray dirt floors with an oil disinfectant mixture, or some commercial product suitable for this purpose.
- Clean the grounds: remove all debris from the area outside the house and mow the grass. Spray the area adjacent to the house with an oil-disinfectant mixture or a commercial product.

### **Brooding temperature:**

Temperature must range from 32-33 °C. Subsequently the temperature under the brooder should be gradually reduced each day totaling 2.8 °C/week until 18-21 °C is reached by around 35 days. a good guide to brooder temperature is the behavior of the chicks. If they huddle together and sound distressed, it is too cool. If they congregate away from the brooder, it is too warm. The chicks should be evenly spread throughout the brooding area.

### **Brooder energy saving:**

- Use the correct brooder height as recommended by the manufacturer.
- Avoid damp litter, which will take more heat to evaporate the moisture.

- Check brooder thermostats and thermometers frequently.
- Placing brooders near the center of the house will reduce heat loss through walls and also through draughts.

### **Stocking density:**

The amount of floor space to allow per bird is determined by a combination of these factors; the size of the bird at killing age , the type of housing, climatic region, and time of the year.

#### **1- *Controlled environment houses:***

At any time live weight not exceed 34.22 kg/m<sup>2</sup>

Live weight (Kg)	Stocking density (Birds/m <sup>2</sup> )
1.13	30
2	16
3.60	9

The stocking density may need to be reduced in summer.

#### **2- *Open (non-controlled environment) houses:*** 9 to 12 birds /m<sup>2</sup>.

### **Water management:**

Water constitutes about 60-70% of the chicken's weight, thus, dehydration must be avoided at all times. Water and feed intake are directly related and so without adequate water intake, feed consumption is depressed and growth rate is reduced. Drinker height should be maintained at the level of the bird's back. At day-old provide in the brooding area are 14 drinker per 1000 birds. Water should be placed close to the chicks. Fill the waterers about 4 hours before the chicks arrive, this allows time for the brooder heat to warm the water.

### **Sugar-water:**

Addition of sucrose to the first drinking water has been shown to reduce growth mortality. An 8% sugar solution is usually provided for

the first 15 hours after the chicks are placed in the brooder house. If chicks are stressed when arriving the farm, water-soluble vitamins and electrolytes may be also added to the drinking water for the first 3 or 4 days.

### **Water space:**

Water space requirement during brooding period is as follows:

- ❑ *Troughs:* 1.5cm / chick.
- ❑ *Pan:* 1.3 cm/chick.
- ❑ *Drinking cups:* 3-4 cups/100 chicks.
- ❑ *Drip-type nipples:* 6-8 /100 chicks.

### **Feeder management:**

For the first few days, feed should be provided in crumbs form and placed on feeder bases, polythene, or paper sheets covering 20% of the brooding area so that the chicks find the feed easily and make a good start.

### **Feeder space requirement:**

*Trough:* Allow 5cm op space/chick.

*Pan/ tube:* 18-20 feeders/1000 birds or 4cm /chick.

### **Watch for “starve-outs”:**

Some chicks may have difficulty in learning to eat, resulting in what is known as “starve-outs”.

### **Litter:**

Litter may consist of white wood shavings, shredded paper, or chopped straw. Hard wood shavings should be avoided because of their high tannin content and susceptibility to splinter, which can cause perforations of the crop and gizzard as well as body abscesses.

Use only fresh material and avoid dusty or mouldy litter to prevent aspergillosis (brooder pneumonia). Good quality white wood shavings are the best. Avoid litter becoming dusty, wet, or caked.

A practical guide for the correct moisture content of the litter is that it should cling together slightly and break up when dropped from the hand. With excessive moisture it will “ball up” when squeezed; if too dry, it will not cling at all. It is recommended that 10cm of shavings are used. Old litter should not be re-used. Always clean out, sanitize, and use new litter for each crop.

### **Lighting:**

Most broilers are grown on a continuous lighting program but one hour of darkness every day is often provided. Then, if power cuts put the birds suddenly in darkness, they will not panic, crowd into corners and suffocate. An intermittent lighting program may reduce bird activity and help digestion with some improvement in feed efficiency and growth rate, and a marginal saving in electricity. A suitable pattern would be:

- 0-21 days: Continuous lighting (with 1 hour off in 24 hours).
- 22-35 days: Cycle 3 hours on and 2 hours off.
- 36-49 days: Cycle 2 hours on and 2 hours off.
- 50 days onwards: Cycle 1 hours on and 3 hours off.

With this program, it is vital to provide the maximum amount of feeder and drinker space, as pressure on both will be too much greater. Even more important is light intensity. Too bright light will cause over activity and feather and/or vent pecking, and can depress growth rate. The usual recommendation is: 0-7 days 15-25 lux (37.5-62.5 watt/11.6 m<sup>2</sup>), reducing to 1-2 lux at 21 days.

## **Nutrition:**

Feed represents over 70 % of the cost of producing poultry meat. Special care should, therefore, be taken in providing the most suitable diet and feed quality. Broiler feed are a complex mixture of carefully selected ingredients to give a balance of protein, energy, and other essential nutrients, providing the bird with a diet capable of promoting fast healthy growth. Poor husbandry and disease can, however, negate the effect of good nutrition and reduce growth rate and feed efficiency. All compound reactions should contain an approved coccidiostat.

## **Health and hygiene**

*Hygiene:* The single most important factor in keeping poultry healthy, is maintaining good hygiene. It is your insurance policy.

Healthy breeders and hygienic hatchery management contribute greatly to disease-free chicks. If good hygiene standards are maintained on the farm, the broiler can achieve un-interrupted growth, aided by vaccinations and medications as appropriate. Hygiene does not mean just the choice of the right disinfectant. It is a total concept dedicated to maintaining the highest and cleanest standards in broiler production

The followings provide a guide to basic hygiene:

1. An incinerator is the best way of disposing of dead birds, but it is not always feasible on larger units. Here use construct a properly designed, tightly cover disposal pit.
2. At the end of each crop, remove all birds from the site.
3. Clean out the litter from each house and remove it completely away from the site.

4. Clean all the dust and dirt from the building, paying special attention to less obvious places, such as air inlets and fan ventilator boxes.
5. Place all removable equipments such as brooders, drinkers and feeders on a clean area around the building for disinfection.
6. Wash down all interior surfaces of the house, fixed and winched equipments and the surrounding area outside, with a general detergent disinfectant.
7. Apply an approved broad-spectrum disinfectant to soak all the lower parts of the house to destroy pathogens.
8. If there are litter beetles and other insects in the house, use an insecticide.
9. Give the same treatment with a detergent and disinfectant to clean all the equipments.
10. When the house interior is dry, put the litter and set up the equipment. Then, close and warm the house to 20°C and fumigate with formaldehyde gas.
11. After 24 hours, open up the house and ventilate to remove remaining gas.
12. Pay special attention to bulk feed bins-bag off all the unused feed and thoroughly clean out and fumigate by the most appropriate method according to age and design of the bins.
13. Water tanks and drinker lines should be drained and flushed through with an officially approved sanitizer, preferably hypochlorite. Finally, flush out the system with clean water to remove any residual traces of chemicals.
14. Adopt a rigorous rodent control policy. Also keep out wild birds and domestic pets.



15. Keep ventilators to an absolute minimum. Provide clean protecting clothing and boots available on site for essential visitors, and keep a record of all visits.
16. Provide and properly maintain disinfectant foot dips at the entrance of each house.
17. For security as well as hygienic reasons, keep doors locked at all times.
18. It is advisable to take swabs from within and around the house as a final bacterial check to maintain high standards.

Remember it is impossible to sterilize a house, but it is possible to reduce the number of pathogens to an insignificant level.

### **Fumigation**

Use of gases and vapor for disinfection is well established in poultry industry for several reasons:

- It is cost effective.
- It cannot damage the interior of the house.
- The fumigants are applied at normal temperature.
- They can be easily removed from the house after use.
- Most bacteria are susceptible to formaldehyde gas, even in the presence of organic matter.

The gas is highly soluble in water; it does not diffuse well into porous material and should really be regarded as a surface disinfectant. However, through condensation, the gas is absorbed by porous surfaces as a film of polymerized formaldehyde.

Clearly the environment during fumigation is critical to its effect. Humidity should be increased to 70-80% for optimum efficiency. The house should be heated to 21 °C before fumigation, then sealed and

left to cool for 24 hours, thus promoting uniform condensation. In practice to gain maximum benefit fumigation should be carried out immediately after washing all interior surfaces. The following methods of generating formaldehyde gas can be used:

A. **Heating paraformaldehyde prills**: Normally the most convenient method of producing formaldehyde gas. The prills are heated to a temperature of 218 °C; generally 1 kg of prills will be sufficient for 300 m<sup>3</sup>.

B. **Formalin vapor**: A mixture of equal parts of water and formalin dispersed as aerosol is a very efficient method, use 28 ml of formalin per 25 m<sup>3</sup> mixed with 28 ml of water.

**Precautions:**

Formalin solution and formaldehyde gas both represent a hazard to human and animal life. Operators should be provided with and wear suitable protective clothing, respirators and eye shields and gloves.

It is essential that emphasis is put first and foremost on disease prevention rather than treatment. Once a disease has broken out in the modern, large intensive unit, it may be difficult to stop it having a very harmful economic effect through lowering all aspects of productivity.

It is not always easy to recognize the onset of the disease, diagnose the cause or take corrective action. Treatment may be very expensive and mass medication methods inevitably treat healthy as well as diseased stock, adding to the financial burden.

Carefully observing the daily routine can provide an early indication of trouble. Keep a daily check on:

- Stock appearance, behavior and general well being.
- Feed consumption.
- Water consumption.
- Mortality.

## **Feather sexing:**

1. Spread wing out like a fan.
2. Look at feather on outer joint-bottom row of feathers are primaries, top row of feather are converts.
3. When the bottom row (primaries) of feather is longer than top row (converts), the chick is a female.
4. When the bottom row (primaries) of feathers is of the same length or shorter than the top row (converts), the chick is a male.



## **Toe clipping males:**

The inside and back toes of all breeding males should be clipped to prevent tearing of the backs of the females during mating. Clip the toes at the outer joint, just above the toe nail. Although clipping is better done in hatchery, toes may be cut out when the 6 to 8 day debeaking is done.

## **Toe clipping female:**

Few female chicks are toe clipped, when the laying pullets were housed in cages, toe clipping at one day-old increased egg production by 15 eggs per bird per year.

## **Dewining:**

Cutting off the end of the wing at the carpo humeral joint when chicks are one day old is not recommended. Although a common practice

with turkeys to prevent flying, it produces severe stress in chickens, reducing the rate of lay.

### **Dubbing:**

Removing the comb or dubbing is a practice followed by many poultry-men. It prevents the comb from being injured during fighting and picking, provides better vision and lowers the damage done by frost-bite. It also reduces injuries occurred when the comb comes in contact with feeder and waterer grills and reels, and with wires in the cages. Normally, all cockerel chicks should be dubbed.

### **How to do it:**

Dubbing is best done when the chicks are one day old, although it may be completed during the first few weeks of their life, both hemorrhage is more common after the first day. With a pair of manicuring scissors, cut the comb off close to the head of the one day-old chick, running the shears from the front to the back of the comb.