

LET'S TALK CHICKEN

With

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CARE OF POULTRY DURING SUMMER- REVISITED

We are publishing this write up again due to its relevance to our present situation, with some additional information from Dr. Chacko.

The performance of birds during hot climate is always affected adversely. The growth rate of broilers goes down; the production of eggs declines, having an increased number of soft shelled eggs, egg breakages etc.

Here are some tips to reduce problems in poultry farms during summer.

The most important factor is to have a cooler atmosphere for birds, reduce the temperature in poultry house etc. Most important step is how to manage drinking water, the unsung hero or often ignored nutrient.

The check points given below are based on the years of observations during farm visits in Zambia.

1. Check the water inlet for the poultry house from the over head tank. It should always be open and working.
2. If the birds are given antibiotic as treatment, please make sure that the birds should not be deprived of water at any time, at any cost.
3. If supplementary or supportive preparations are given please do not ever close the water inlet to the poultry house from the overhead tank, at any time.
4. Check the valves in the tank to find out if they work correctly, giving enough pressure and good flow of water.

5. Check the tank capacity, for every 1000 layers tanks require 400 liter capacity, especially during summer. That means for 10,000 layer birds we need total of 4000 liter capacity tank/s; during hot climate birds drink, some times 2/ 3 times, more than the normal. This rather high level is also to take care of good reserve of water if there are power outages for hours.
6. Water tank should be under shade, to have water in it always cool.
7. Painting them white and wrapping with aluminum foil will help cool down the water in them.
8. Check nipples or automatic drinkers for right flow of water.
9. Check the nipples, if they are in position so that the birds have an easy access to them.
10. In cages, check the nipples for water in the beginning, middle and end of the poultry house, in all rows of cages.
11. Check the birds if they are panting. Check also their combs, upright having good colour (normal pinkish red) and fleshy or fall on sideways. The combs fall on side ways is an indication that the birds do not get enough water.
12. Check the droppings. If it contains more white matter (uric acid), the indication is that the birds have not taken water at all for a while.
13. Check the egg troughs for eggs just before the first collection of eggs to assess the condition of birds in side a specific cage.
14. Check automatic drinkers: are they placed or raised to the birds' shoulder height properly, do they work with good flow of water?
15. In deep litter check if the number of automatic drinkers are enough (One automatic drinker for every 80 adult birds)
16. Check if plastic feeders and drinkers are properly positioned or adjusted.
17. In small scale farms the water is usually collected in drums, and kept in or kept near the chicken run. Avoid any dirt or dust entering the drum.

Please make sure that the water in these drums is cooled by clean ice cubes before they are taken to birds. This can be done after the birds reach the end of 3rd week. When you prepare the ice please take precaution that it should be from clean water. In doubt, please boil the water and cool it to be used to make ice.

Birds' responses to heat.

Heat is produced by metabolism within the body, which includes maintenance, growth and egg production. Heat production is affected by body weight, species and breed,

level of production, level of feed intake, feed quality and, to a lesser extent, by the amount of activity and exercise.

How do birds respond to increasing temperature? Birds will try to re-establish their heat balance with the surrounding by changing their normal behaviour.

How?

The birds may try to be away from other birds. They move towards cooler areas. They extend their wings to expose areas of skin that have no feathers. They tend to rest, in order to reduce heat generated by activity. Reduced feed intake and increased water consumption are followed. Their skins look darker due to the fact that they tend to divert blood from internal organs to the skin. Panting becomes faster as the temperature goes up.

Can poultry acclimatize to high temperatures?

Birds take about five days to acclimatize to high temperatures when they are old where as they are more susceptible to sudden, large changes in temperature. The first very hot days after a cool weather often result in increased incidence of heat stress. This could be due to poor acclimatization, but some would be due to the farm being less well prepared to face a sudden spell of heat.

What happens when the birds pant?

Panting removes heat by the evaporation of water from the moist lining of the respiratory tract. However, panting itself generates body heat, and it causes poultry to eliminate water from the body. It can induce respiratory alkalosis, which occurs because the bird "blows off" excessive carbon dioxide (CO₂) when it pants as a result, a rise in blood plasma pH. Blood potassium and phosphates deplete; and sodium and chloride increase. This affects the quality of egg shell adversely.

That is the reason why we get more breakages and soft shelled eggs during summer.

As the shift in body fluid pH occurs, feed intake is increasingly depressed, adversely affecting growth, production, and overall performance of the bird.

How to reduce heat stress?

Feed and feed management

Any management intervention that increases nutrient intake during heat stress will minimize the drop in production/growth efficiency. Three easy ways to increase nutrient consumption are to increase nutrient density, take advantage of natural increases in feed consumption at certain times of the day, and adjust ventilation (curtains etc) to provide more cooling during the evening.

A very direct way to ensure optimum nutrient intake despite decreases in feed consumption is to increase the nutrient density of the ration.

A second alternative is to feed the birds at the time of day when feed consumption is highest. Shortly after light come on, feed consumption is high. It gradually declines during midday and then increases about 1 hour before lights are turned off. If birds are fed during the cool part of the day, feed consumption will be higher. Birds should not be fed during the afternoon in periods of hot weather since this will increase the amount of body heat due to digestion of feeds. The birds, therefore will find it difficult to dissipate the extra heat and thus increase the potential for heat prostration in them. Abrupt changes in feeding times should be avoided as well.

A third management approach is to cool the birds as much as possible during the evening hours. Layers or broilers tend to build up body heat during extended periods of hot weather. If their body temperature can be reduced during the evening, the birds will be able to consume more feed in the early morning. The house can be cooled in the evening by keeping the curtains completely open to allow the cooler air to enter the poultry house.

Putting ice cubes in water for the chicken, both times of the day, say at 10 hrs in the morning and 16 hrs in the afternoon will help the water get cool.

Please make sure the water tanks are placed under shade. Painting over- head tanks with white paint or keeping a thatched over hang above them will help keep the water inside cool. Wrapping the tanks with Aluminum foil is very effective in cooling the water. If the tubes leading to poultry house get hot they should be cooled by covering them with clothes and wetting the clothes frequently.

Housing

The direction (orientation) location, width and openings, insulation, roof overhang, equipment design all affect the temperature inside the poultry house.

Air movement is particularly important in houses that are ventilated by natural air circulation. All poultry houses, particularly curtain-sided houses, should be positioned so that the roof line runs from east to west.

This orientation will keep direct summer sunlight from coming through the sidewall and causing heat to build up within the house. Adequate insulation in the ceiling and sidewalls will pay dividends by reducing the amount of the sun's radiant heat energy that reaches the interior. In Zambia insulating roofs has not yet become an essential part of managing poultry but the time has come for poultry farmers in our country to appreciate the merits of this system. The ridge ventilation also helps in letting the heated air to escape.

Width of the house is so important for natural ventilation. An ideal width for open sided house is about 8 meters. Air in and air out should be the principle. The air enters should not be heated, circulated as stale air , gathered dust with lots of germs should be avoided.

One another factor that affects heat gain of a house is the condition of the roof. A shiny surface can reflect twice as much solar radiation as a rusty or dark metal roof. Roofs should be kept free of dust and rust. Roof reflectivity can be increased by cleaning and painting the surface with metallic zinc paint or merely white washing at top of the roof.

Managing Surroundings

A grass cover on the grounds surrounding the poultry house will reduce the reflection of sunlight into the house. Vegetation should be kept trimmed to avoid blocking air movement and to help reduce rodent problems. Shade trees should be located where they do not restrict air movement.

Equipping poultry houses to keep heat stress under control

During the summer when the temperature and humidity are high, proper poultry house ventilation is vital to ensure the necessary removal of heat and the continued

productivity of the flock. In modern poultry rearing systems most of the ventilation systems have a number of components. These include curtains, fans, fogging nozzles, evaporative cooling pads, timers, static pressure controllers, and thermostats.

Most ventilation systems can provide an adequate indoor environment when properly managed. If the design and management of the ventilation system fails to satisfy the flock's ventilation needs, stale, contaminated air can build up in the poultry house. Stale air and contaminants, including ammonia, moisture, carbon dioxide and carbon monoxide, and dust, can cause stress and lead to depressed performance. Stress may impair the immune system and increase susceptibility to disease. To reduce problems with stale air and contaminants, air temperature, air speed, and relative humidity must be controlled by careful management of the ventilation system. We have mentioned all these facts basically to remind you of the necessity of having an appropriate ventilation system in order to combat the ever rising ambient temperatures year in and year out in our country. We may have to implement some of these mentioned above, in the near future in Zambia!

Natural ventilation

This is the most common method of ventilation that we have been used to even though a few layer and broilers farmers in Zambia have installed modern ventilation, heat and light control systems in their operations. Curtain-sided houses rely extensively on natural air movement. These houses work best when they are located away from obstructions such as other buildings or trees that can block natural air currents. To avoid total reliance on natural air movement, it is important for considering fixing circulation fans in curtain houses to increase air movement and promote the loss of body heat from the birds.

Other methods of ventilation employed in environmentally controlled houses include forced ventilation, usage of exhaust fans (based on negative pressure system), blowing fresh air from outside (positive pressure system) and tunnel ventilation (works best when there is no pressure difference between the inlets and the fans). This information is for the future, any way.

Litter, feed, and water management

In open house rearing, the management of litter becomes the most important consideration to keep the birds comfortable. Avoid any hardening or caking up of litter.

Top up the litter with fresh dry litter. Avoid the litter becoming too dry that may raise a lot of dust with in the poultry house.

Provide feed only during cooler hours of the day, let the birds eat during early morning, evening and night but provide fresh cool water 24 hours a day non-stop.

Water is lost from the lungs when birds pant and so more water needs to be drunk to prevent dehydration. Cool water stimulates water intake. Reducing the body temperature of the bird is beneficial and has been associated with reduced mortality. Keeping a reliable, clean, cool source of water available to poultry is essential to help the birds cope with high temperatures. Because the birds excrete electrolytes (trace minerals) during periods of heat stress, electrolytes can be added to the drinking water to replace those that are lost and to stimulate water consumption. Avoid placing water pipes near the ceiling where the water will gain extra heat. Line in which the water has become warm can be drained to allow cooler water to reach the drinkers.

Stocking density- in conventional open sided houses 10 broilers per Sq. meter and 5 layers per square meter will be adequate. Increase drinking and feeding space. Increase the number of feeders and drinkers during summer. If the width of poultry house is more than 8 meters it is advisable to thin down the number of birds further, say 8 or 9 broilers or 4 layers per square meter.

To conclude, I would like to note that as poultry farmers, we require understanding and appreciating the changing weather patterns in our country, and adapt to the available systems and the tools by which we can keep our chicken as comfortable as possible. Genetic potential in each bird is waiting for us to explore and harness the benefits. We have to wake up now to embrace the most appropriate management system that we can or we can afford to employ at your farms. Ultimately only one fact remains : the comfort of your birds is the key for success!

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