

LET'S TALK CHICKEN

Dr Anthony Chacko

**(National Milling Corporation)
National trustee, Poultry Association of Zambia**

MANAGING LITTER AND SURROUNDINGS DURING RAINY SEASON.

We have rains again this time. During this time, managing litter and manure becomes the key thing in chicken rearing as we consider certain measures very seriously to avoid diseases and also to get the maximum out of the chickens in terms of production, growth, mortality and FCR.

It's a fact like day light, given the right to live the way they want to, every chicken will opt for staying free ranch! We, with our own personal motive of getting the highest profit from chicken rearing, have manipulated a lot of things including confining them in deep litter or in cages. Since we have done it as part of pay back, we should keep the chicken flocks as comfortable as possible. Again our motto should be: 'Give them comfort, reap profit'.

Litter is where the chickens spend all their life, in floor rearing system, from the time they are housed until they are marketed.

Litter is the bedding for the birds and the material selected for this purpose should have qualities that make up to a good litter. That means what we put in as litter should make a comfortable bedding for the chicken until they leave their abode! The litter should be highly absorbent, light in weight with medium or

small particle size and dry rapidly. It should absorb effectively moisture, dilute the concentration of droppings, help insulate floor from the ground moisture and create a stimulus in the birds to scratch and dust bathe.

Condition of the litter

The fact is that if the surface is moist and the air is humid a **good** litter absorbs moisture. If the air is dry it releases moisture into the air. Normally the ideal moisture content of the litter should be between 25% and 30%. If the moisture contents falls to say 20% the litter becomes too dusty, not good and if the moisture goes up to say 40% the litter gets wet and caked up, not good at all.

The best way to assess the management of deep litter rearing can be summarized in the statement: "If you are around any chicken rearing operations and happen to smell chicken manure, you actually smell **mismanagement**"

In a poorly managed litter wherein the litter is wet and caked up, the microbial germs grow very fast. The infection may enter the chicken through their feet, which may get irritated, cracked and easily then get infected in a dirty caked up litter. Ammonia build-up is high in a wet and caked up litter. More than 20 ppm of Ammonia in the air close to the birds is bad news! Ammonia irritates the eyes and by inhalation it damages the inner lining of the respiratory track of the birds exposing them to infections. It also inactivates the effect of free chlorine in the chlorinated drinking water.

If the litter is too dry, on the other hand, the air becomes quite dusty and the respiratory system gets irritated and then easily invaded by microbes, in the process, the resistance against respiratory diseases goes down tremendously. Moreover, the vaccine response to disease such as Newcastle will have to be compromised due to the damage caused by the microbes on the epithelial lining of the respiratory system.

Litter material

Selecting a good litter material is the first right step! As mentioned earlier, we need to emphasize that the litter should be good absorbent, soft, non-dusty, quick drying, non-cake forming, free from offensive odours and non-toxic to chicken and avoid of sharp objects.

Various materials such as wood shavings, cut sugar cane bagasse, hulls of cotton seed, soy bean and sunflower seed, crushed maize cobs, maize bran, chopped straw or chaff, dried leaves and grass, can all be used depending on the availability. Among these materials, wood shavings undoubtedly are considered as the best litter material. Others do not effectively help 'oxygenate' the litter, break down the litter as fast as possible and avoid caking up and anaerobic conditions in which some pathogenic bacteria may grow.

Managing litter

Properly stored dry litter material is spread rather thinly, say about 5cm thick on the floor before the chicks are placed. Fumigation is done with the litter spread on the floor.

Make sure that the litter material does not come from a contaminated source or treated with toxic chemicals.

Never remove the litter during the grow- out period unless it is necessary. If the litter is quite wet and caked up in certain areas of the chicken house only that litter it can be removed and replaced with new litter. Normally once the litter is placed on the floor before the chicks arrive it can be replenished periodically. For instance in the case of broilers during third week and fifth week more litter can be added and forked into the existing litter. By fifth week the ideal thickness of the litter should have 12 –15cm.

For the general health and for the strength of the legs of the birds, keeping proper depth and looseness of the litter forms an essential management function. Constant monitoring of litter such as removal of wet litter, breaking of caked litter, raking or forking the litter (if the litter is already caked up please do not disturb it!) with out creating too much dust and ammonia and periodic addition of fresh litter should become part of routine work of a successful poultry man.

If a handful of litter sticks together when it is squeezed and then released, the indication is that it's too wet. We should be able to assess and adjust temperature, ventilation and drinker management to achieve an odour-free litter. We should check litter regularly for wetness. With clean litter, we can get birds with clean feathers in broiler and clean eggs in layer operations. Proper ventilation becomes critical and becomes the most important component to make sure that the litter is kept right. Right ventilation becomes the corner stone

for right litter where in the ventilation helps remove excess moisture, gases and keep the litter as dry as possible.

Remember, wet and caked litter becomes a breeding ground for all sorts of germs, predisposes the chicken to infections such as Coryza, Coccidiosis, Chronic Respiratory Disease (CRD), fungal infections, intestinal parasites etc.

Among them Coccidiosis is purely a management issue. It affects intestine, caused by protozoan parasites called Eimeria. Eimeria tenella, E. acervulina, E. maxima, E. nicatrix, E. mitis and E. bruneti are the major species affecting poultry. **The sporulation takes place in the litter when the temperature and moisture go up in the litter.** Birds ingest sporulated oocysts of the parasites and get infected. The sporulated oocysts can be found in litter and contaminated feed and water. The germs after sporulation multiply rapidly, intestinal wall is ruptured, the released oocysts shed in the droppings and the cycle is repeated. If not controlled on time with anti-coccidial drugs it may end up in diarrhea with blood in the droppings and mortality. **The key in prevention of Coccidiosis lies in managing the environment- litter, ventilation, temperature, leakages, litter disposal etc as explained in this write up.**

Another disease condition commonly noticed during summer and at the onset of and during rainy season is that due to the condusive atmosphere of high temperature and humidity bacteria and other germs multiply enormously causing infections to chicken. For instance, E-coli, opportunistic bacteria, can do havoc in poultry causing production drop, diminished growth and mortality during this period. One major source is found to be contaminated water or chicken manure that is spread near the water source. During summer and at the onset of rains the ground water table is also reduced, as a result the concentration of contaminated water in the bore well or any other open water source can be high.

Wet litter is also a result of defective ventilation, over crowding and loose droppings. Faulty drinking system can cause wet litter, so can a leaking roof! High levels of salt and sometimes high protein and high fiber diets tend to cause wet litter.

More over, during rainy season the humidity (the moisture levels) in the atmosphere is already high and keeping the litter dry is a herculean task. The poultry men should be aware of this phenomenon especially during rainy reason in Zambia. Apart from keeping the exhaust fans in poultry house, toping up the litter with fresh dry litter will help in containing the

moisture levels in the litter. Please make sure that the over hangs are placed if necessary, on the sides to prevent any direct rain water from entering poultry house. This has to be done carefully not to block aeration. Leaks on the roof have also to be worked on before the rainy season. Foggers can not be used to reduce the heat inside since they can increase the humidity inside poultry house on rainy days.

If high moisture level in the litter still persists treat the litter with slaked lime (lime wash) at the rate of one kilogram (1kg) for every ten square meter of the floor area. Fork it into the litter and rake the entire litter. This can be done only if the litter is sufficiently thick (10 – 15cm at least) and loose. Lime acts also as a disinfectant; helps destroy most of the coccidial oocysts, eggs of intestinal worms and other germs harboured in the litter.

In order to minimize the ammonia level by reducing the pH of the litter there are some litter acidifying agents which are being used more frequently in the developed countries.

Disposing litter (chicken manure)

Care should be taken to remove and dispose the litter after the grow- out so that the bio-security precautions are observed strictly. Our main objective here is to see that the litter contains the least number of pathogenic organisms and that while disposing it and no cross contamination at the farm takes place by wind or mechanical means.

While removing the litter, after the birds are removed, keep the poultry house closed

(Side curtains, door). Gather the litter and keep in heaps in the poultry house. Cover these heaps with used empty jute or feed bags. The litter in those heaps starts decomposing faster and in the process produces heat. During this process germs are being destroyed. In order to get the decomposition speeded up slaked lime mixed with water can be poured over the heaps of litter. The germ load, in this case will also tremendously be reduced. The lime treated litter will be a better feed (for cattle) or fertilizer material. The treated litter can be removed within 3 to 4 days and disposed far away from the farm or sold.

Aftermath!

'Every creature's waste is a priceless resource for some other creature'

Properly kept and managed litter can be fed to cattle or used to fertilize the soil. The quantity of litter from say 1,000 layer deep litter rearing system is about 25 - 30 metric tone per annum where as 1,000 broilers yield about 1.2 – 1.7 metric tone of litter.

Poultry manure is a valuable source of Nitrgen, Phosphorous and Potassium and rich in trace elements. As commercial fertilizer price soars every season, it is high time our farmers took more interest in livestock manure, especially chicken litter for fertilizing their crops. Poultry litter has a high level of Non-Protein Nitrogen (NPN). The ruminant digestive system can convert NPN sources into amino acids that are essential to cattle. Poultry litter with straw can also be used to prepare silage for feeding cattle.

Finally, in a nut shell, we should take care of the litter. Rainy season is quite tricky as well. Our intention is to give utmost comfort to our Chickens.

In case of any clarification required, please contact: ChackoA@nmc.co.zm