

The importance of appetite development in young broilers

Appetite development is the most important priority for every broiler grower during the first 72-96 hours of the chick's life. Start by establishing a healthy flock from day one. This requires giving sufficient nutrients to develop the different physiological systems – cardiovascular, pulmonary, alimentary tract and immune – as well as protecting skeletal growth and feather cover.

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At hatch, the chick can be compromised by immature or poorly developing tissues and requires a rapid transition to proper tissue growth to achieve the best economic return.

A day-old chick (DOC) possesses a yolk sac that contains different nutrients including carbohydrates, lipids, protein, maternal derived antibodies, vitamins, minerals and water, connected to the mid gut via the yolk stem. This allows the chick to be nutritionally self-sufficient.

The yolk stem is only open to the gut prior to hatch and until approximately 48 hours afterwards. A consumed yolk sac will be clearly shown by the presence of The Meckel's diverticulum, as seen during post mortem examination of the chicks. An unabsorbed/retained yolk sac can be caused by poor brooding management practice and/or infection.

At the start, yolk lipids provide the only energy source for the chick. A first priority during brooding is the successful transition from endogenous energy source (yolk lipid fat) to exogenous energy source, which is the carbohydrate from the feed within the first 72-96 hours.

- Chicks that have not developed appetite within the first 72-96 hours become slow feeders and can never achieve economically optimal growth.
- The chick can only develop appetite within the first 72-96 hours.



Young chicks initially have no idea that the broiler starter feed is actually food. They only possess an instinctive pecking behaviour for interesting particles. This may be coarse particles (ie. any particle that gives shadow), which can be feed particles if the brooding condition is satisfactory, or wood shavings in the event of insufficient feeding space.

The key to success is to provide enough feeding space in the brooding area (<50% of the total brooding area) by covering it with white paper and by having a minimum of 75g of broiler starter feed per chick, with the texture of sieved crumble (diameter of 1.0:2.0mm) to optimise pecking behaviour at day one.

Chicks develop an appetite when sufficient 'interesting material' is consumed. This occurs when their crop is full of feed and water, which allows digestion and absorption to take place and ultimately provide sufficient nutrient level in the



- Temperature and ventilation are of equal importance during the first days of brooding.

bloodstream to stimulate the appetite centre in the brain. Typically this happens about 30 hours after feed consumption (ie full crop) occurs. Only at this stage do chicks recognise feed material as food.

Chickens prefer to eat and drink when other birds are also present at the feeders or a drinker – that may explain why chickens perform better in groups rather than individually.

Brooder area set-up

Whether whole house or spot brooding, there should be:

- A minimum of 28°C concrete temperature.
- Dry bulb temperature of 32-34°C with relative humidity of 45-65%.
- Light intensity of a minimum of 20 lux at chick level.

Day-old chicks are poikilothermic for the first five days, as they depend on the brooding conditions to maintain body temperature. Therefore, the internal chick temperature should be maintained at 40.4-40.6°C for the first three days. The

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temperature should be measured gently inside the cloaca.

Good quality air is critical. A minimum oxygen level of 19.6% (Max 3000ppm for CO₂, Max 10ppm CO, Max 10ppm NH₃ and inspirable dust <3.4mg/m³) must be obtained. Minimum ventilation should run on a five minute cycle time with a minimum run time of 60 seconds.

A high CO₂ level will reduce chick activity, feed intake and water consumption leading to increased incidence of dehydration and lower weight gain, as well increase incidence of right ventricle failure later in life (Ascites).

Feed and water space

A minimum of 50% of the floor area needs to be covered with paper that contains 75g/chick (feed carpet).

Young chicks must have free access to fresh and clean water. They consume more water for bodyweight compared to older chicks. Without water, dry feed forms clumps in the crop, which can press on the bird's carotid artery and cause death.

Nipple line water pressure

Higher water pressure does not mean higher water consumption. A bird's beak can only hold so much water during the pecking and drinking process and any water discharged greater than this will spill and cause wet litter. This will increase the incidence of foot pad lesions and result in ammonia releases from the litter and unhealthy conditions in the poultry house environment.

Too low pressure can reduce water consumption by as much as 20%. Low

pressure will not lead to birds spending more time at the drinkers. In fact, birds spend the same amount of time drinking whether the volume is high or low. Reduced water intake will only lead to reduced feed intake and consequently lead to reduced weight gain and poor performance.

To determine the correct water pressure setting, it's a good practice to examine litter conditions underneath the nipple line. Wet litter under the drinkers indicates the pressure is too high and the drinkers discharge more than the birds can drink.

Completely dry litter indicates the birds may not have access to sufficient water which is usually due to low pressure.

Nipple height

The presence of the Choanal cleft (a split in the upper hard palate) allows air into the nasal passages and prevents the chicken from forming a mouth vacuum, which causes them to rely only on gravity to draw water into the crop.

At placement, the end of the trigger of the nipple should be just slightly higher than eye level. As the flock ages, an imaginary angle of 45° between the nipple and the chick's back will ensure the best water intake. Daily management of the drinker line height will help you maintain optimum water intake.

Poor water management can lead to mortality, poor uniformity and poor performance. A closed watering system does not allow the farmer to see visual water quality. To check the water quality, a bacteriological examination can be done by swabbing the interior of the water line.

A minimum of two water samples must be taken per year (one time at dry season and the second during the wet season) on farms

- Never allow drinking water to reach brooding temperature; regular flushing of the water lines will maintain favourable water temperature.

equipped with borehole/artesian well for chemical and bacteriological analysis to determine its quality compared to the chemical/bacteriological recommendations for the chicken.

During brooding ensure 20ml/min flow of nipple drinker line for the first seven days. Water temperature should be between 10-14°C, with regular flushing to achieve this.

Check chicks

Ensure a uniform distribution of every aspect of the environment (light, feed, nutrition, water supply, temperature, humidity, air quality, stocking density, vaccinal start-up) to confirm uniform appetite development.

Chicks should not sacrifice between feed and water consumption, or temperature and quality air.

Two hours after placement, check chick distribution, activity and behaviour and tackle every possible cause that can lead to variation.

Crop fill conducted after placement from a sample of 100 chicks per brood area is shown in Table 1. ■

Table 1. Crop fill after placement.

Hours after placement	Crop fill of feed and water
12	60%
24	>95%