

Improving performance of day-old chicks by treating them like royalty

In the first seven days, broilers have to multiply four to five times in body weight. To achieve this goal, optimal management in the first week is very important.

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The first seven days of the broiler's life is the most sensitive period because the bird is changing from an immature thermo-regulation system to a mature one. If we think that only temperature is important in this period, we are making a big mistake. In this period, we have to take into account the temperature, the air quality, the water and the feed.

Temperature

Since day-old chickens are still poikilothermic during the first days (can not maintain a proper body temperature), the farmer still has to continue to 'brood' the chickens. Day-old chicks are highly dependent on floor contact to help regulate the changing temperature. The ratio of body surface to body mass is very large if you compare it with an older broiler, so young chickens will lose their heat much faster.

If the ambient temperature is too low, chickens will try to save heat by huddling together or by burning feed to keep warm.

In that way, chickens will lose yolk moisture less effectively and, in practical terms, larger yolks can be observed after three days. In the opposite case, high temperatures will lead to a removal of heat by the bird, especially by panting, and birds will stop eating. After some days, dehydration will occur.

As a control, the chick's internal temperature can be measured. This body temperature should be situated between 40.4°C and 40.6°C. Research has shown that a reduced or elevated temperature in the first week will lead to a reduced growth rate. The ideal ambient temperature in this case was 32°C with a relative humidity of 30-50%.

Air quality

Ventilation systems will distribute the heat throughout the house and maintain the good air quality in the brooding area. For birds, O₂ (oxygen) should be around 19.5%, CO₂ (carbon dioxide) should be below 3000ppm, CO (carbon monoxide) and NH₃ (ammonia) should be less than 10ppm and dust levels have to be less than 3.4mg/m³. O₂ levels in the air will depend on the height of the farm, with less available oxygen at the highest farms.

High levels of CO in the house are caused by an incomplete burning of fossil fuels. Birds can tolerate certain levels (600ppm for 30 minutes) but if the concentration and the exposure time is too high (3000ppm for two hours), they will die. A normal CO₂ concentration in a house varies around

400ppm. Especially in the winter, this CO₂ level can increase due to a low air exchange rate. If the chickens are sitting near the outside walls, the reason can, next to high temperatures, also be high CO₂ levels. This is because the oxygen concentration will be the highest near the outside walls.

Water

Water is an invisible player in the brooding period. Many times, this important ingredient is forgotten in the poultry industry. Water is an essential nutrient that plays a role in all physiological functions. A 40% water restriction will lead to a lower feed intake, a lower body weight and a higher FCR.

In the first 24 hours, a chick should drink at least 24ml of water. Since the water intake is very low in the beginning, water flushing is a good tool to maintain proper water temperature for the birds.

Feed

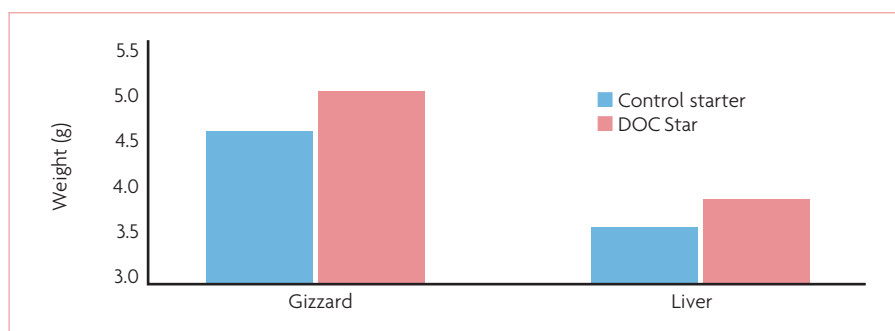
Upon arrival, it is common practice in broiler houses to use chicken paper topped with the pre-starter feed to improve feed access for day-old chicks. A pre-starter is formulated for the first 7-10 days after hatch. However, the physiology of broilers is changing very fast during the first days of life. The transition of the digestive system from embryonic absorption of yolk to ingestion and digestion of feed is taking place. At the same time, a metabolic transition occurs: while in the embryonic stage most of the energy is supplied by fat, the main energy source of the post-hatched chick is carbohydrates.

A brooding complement, which is specialised for the first two days after hatch, can therefore prepare the chick more optimally to overcome these dramatic changes during its life. As chicken paper is commonly used by the farm manager, no extra labour is needed to replace the pre-starter on the chicken paper by a special brooding complement.

A good tool to check the chicks is to feel at the crop of 100 day-old chickens after 10

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Fig. 1. Brooding complement improves organ development (bird age: 4 days).



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hours. A minimum of 80% of the birds should have eaten already. After 20 hours, the amount of chickens that have eaten has to be 100%.

The objective of the first 24 hours is for the chick to consume 25% of its own body weight in feed and to drink 50% of its own body weight in water.

Brooding complement

Nuscience successfully introduced its brooding complement DOC Star some years ago to overcome the difficult post-

hatch period of broiler chicks. This product was developed with special attention to stimulation of feed intake.

The quite soft and fine crumble easily disintegrates in the crop into its constituents (i.e. highly digestible raw materials) and improves the emptying of the crop and gizzard which reduces the satiety signals and increases early feed intake.

The earlier birds start to eat, the more efficient the residual yolk is internalised. If the protein needs of the hatchling are immediately covered by a well-digestible brooding complement, the yolk can be optimally used as a source of (maternal)

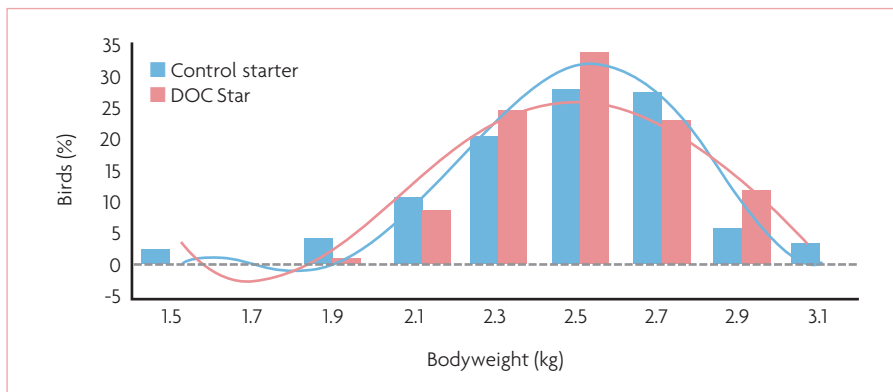
immunoglobulins thereby increasing passive immunity of the bird.

Complementation of a special diet high in readily digestible ingredients with a correct balance of nutrients is essential for the development of the small intestine.

Faster development of the digestive system increases the digestion and absorption of nutrients, which are the building blocks for the development of the supply organs, such as the liver and gizzard.

Providing DOC Star on the chicken paper for the first days increases the relative weight of the liver by 8.3% and that of the gizzard by 6.4% (Fig. 1).

Fig. 2. Brooding complement improves flock uniformity (bird age: 38 days).



Uniformity is key

The best way to improve performance of the complete flock is not to increase the seven day weight of the fastest starters but to decrease the number of slow starters. The goal is to achieve a maximum of 8-10% variation between the chickens.

With DOC Star, this goal can be achieved in the most efficient way. Weaker chicks and early hatchers will benefit to a great extent from DOC Star during the early brooding period (Fig. 2). ■

References are available from the author on request