

Technical information

A Detailed Look at Early Feeding

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HatchCare

Traditionally, chicks hatch in a dark environment, without feed and water available to them until they arrive at the broiler farm. Including the hatch window, processing at the hatchery, and transportation, this may take up to 72 hours for the first chicks that have hatched. This delay in first feed and water intake has been associated with decreased growth, delayed gastro-intestinal tract development, and reduced functioning of the immune system.

To solve this problem, HatchTech introduced HatchCare: the hatcher with feed, water, and light available to hatchlings immediately post-hatch. HatchCare thereby provides all chicks throughout the hatch window with an optimal start to life. All chicks can choose their own moment to start

eating and drinking post hatch, continuing their growth and development. Since HatchCare is such a novel system, many questions still exist as to how HatchCare chicks compare to traditional hatcher chicks. Also, much is unknown about when they start eating and drinking.

HatchCare vs. traditional hatcher

To gain more insight into how chicks behave in HatchCare, and how they develop, HatchTech Research observed HatchCare chicks and compared them to traditional hatcher chicks from the same 42 week old Ross 308 parent flock. All eggs were incubated in the same setter and then placed in either HatchCare (28,160 eggs) or a traditional hatcher (61,000 eggs). Of these, 320 HatchCare eggs and 180 traditional hatcher eggs were used for observations.

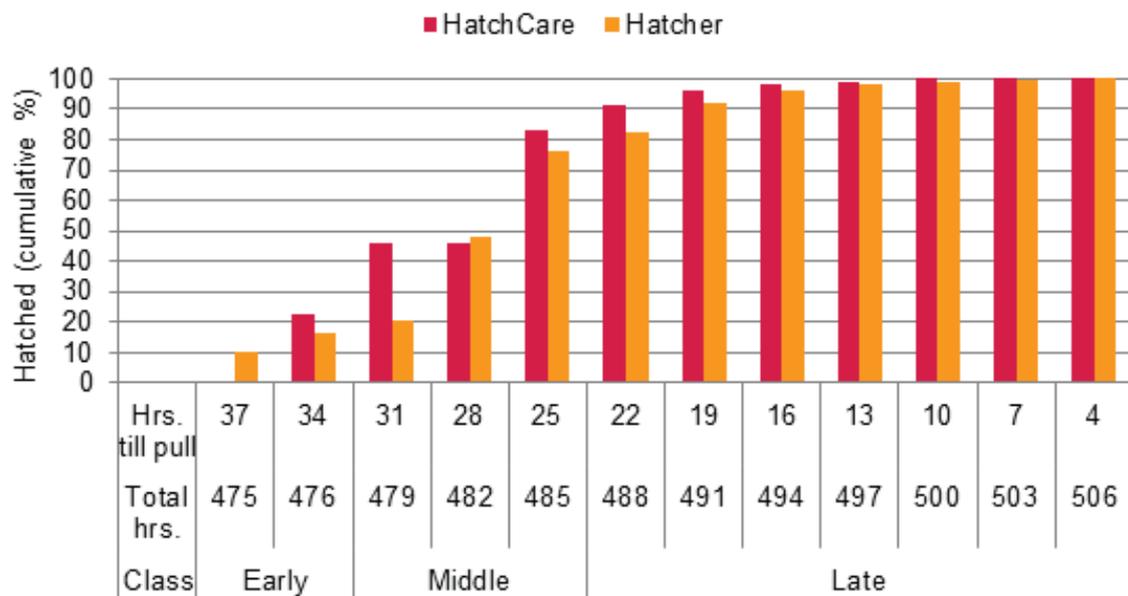


Figure 1. Cumulative percentage hatched at different incubation times are grouped into hatch classes.

The water in HatchCare was dyed blue using food coloring, so that the beak of chicks that had started water intake stained blue. From day 19.5 of incubation onward, the eggs were checked every 3 hours. Hatch time was grouped into early (≤ 477 hours of incubation), middle (478 - 486 hours) and late (≥ 487 hours) hatcher (Figure 1). In HatchCare, both newly and previously hatched chicks were weighed and checked for blue beaks and crop fill every 3 hours, providing insight into body weight progression post hatch and when chicks first started feed and water intake. In the traditional hatcher chicks were also weighed every 3 hours.

Body weight loss until water intake

HatchCare chicks did not start water intake immediately post hatch. Like the traditional hatcher chicks, HatchCare chicks initially decreased in body weight. Through drying of the fluff, excretion of meconium, and breathing, they lost 0.4 grams of body weight for each 3 hours post-hatch without water intake (Figure 2). Once they started water intake, their body weights increased. This emphasizes the importance of post hatch water access; if the chicks had not had access to water, like in a traditional hatcher, body weight loss would have continued and they would have been at risk of dehydration. Water is essential for many different processes in the body, such as tissue growth, transportation of nutrients, and heat distribution. Water will furthermore stimulate feed intake in chickens.

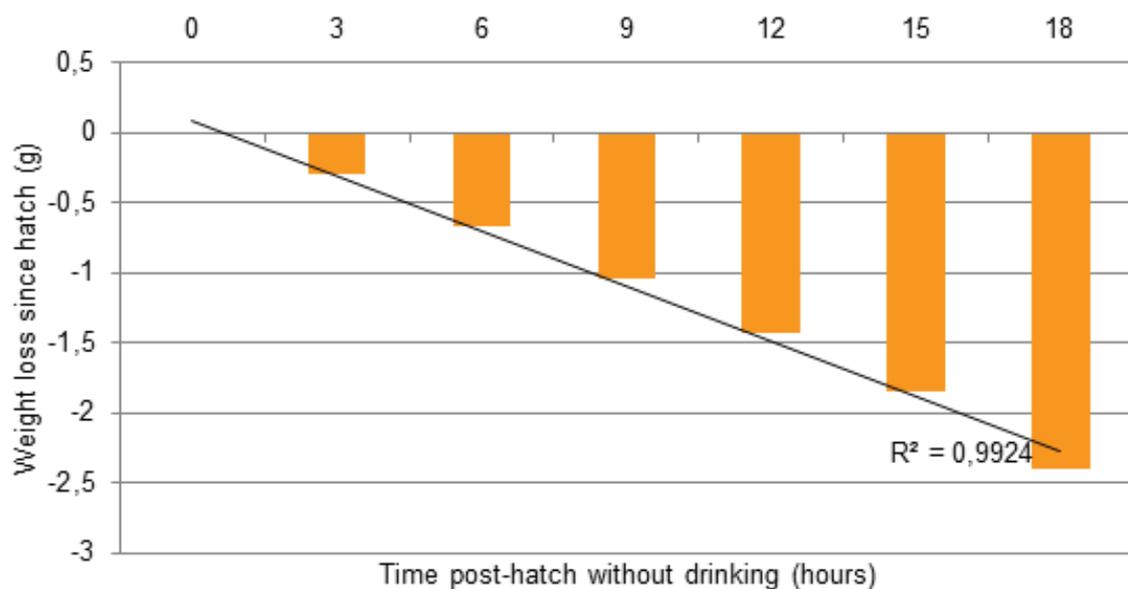


Figure 2. Body weight loss since hatch of HatchCare chicks related to hours spent post hatch without starting water intake.

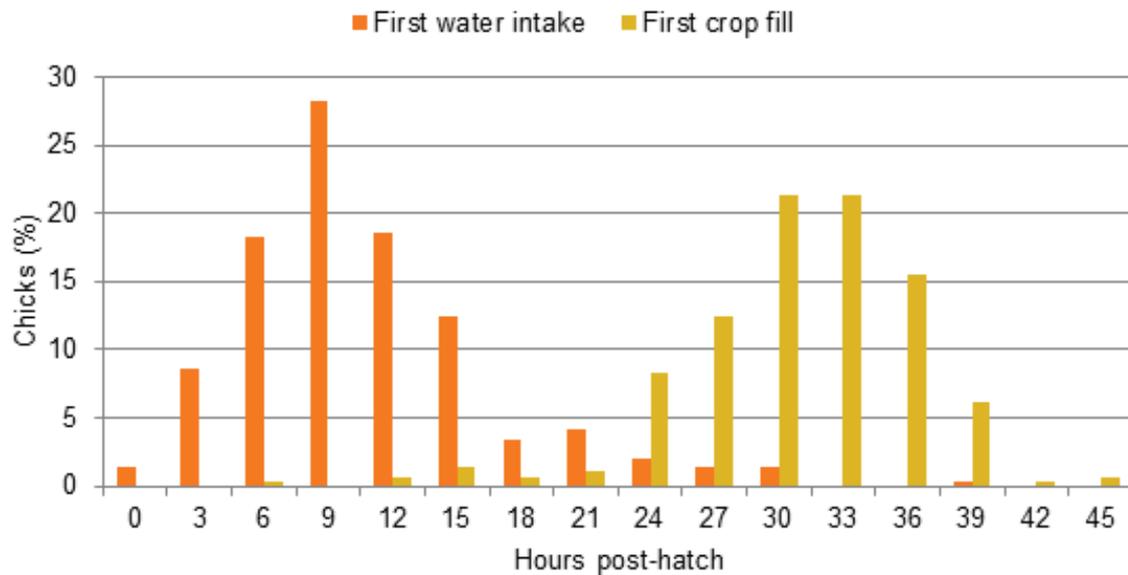


Figure 3. Moment of first water intake and first crop fill, signifying the start of uptake of large volumes of feed, post hatch

First water intake

Chicks take some time to dry, rest, and then explore their surroundings before they start first water intake. The exact moment of first water intake varied per chick (Figure 3). At 6 hours post hatch, 28% of all chicks have started water intake. After 9 hours, this has increased to 56% and after 18 hours, 90% of all chicks have started water intake. When chicks started water intake was depended on the moment they hatched: early and late hatchers started water intake later post hatch than middle hatchers (Figure 4). By pull time, more than 99% of all chicks had started water intake.

First feed intake

Feed intake started long before the crop was full for the first time. Chicks were observed to peck at and eat a single or a few pellets of feed, which is enough to start microbiota population in the gut, stimulation of yolk uptake, and maturation of the intestines. It took longer for the chicks to start eating large amounts that could be felt when the crop was checked every 3 hours. 27 hours post hatch, 24% of all chicks had had a full crop (Figure 3). 30 hours post hatch, this had gone up to 46% and it further increased to 90% at 39 hours post hatch. Again, when chicks started intake of larger volumes of feed was depended on moment of hatch: early hatchers took the longest, followed by middle, and then late hatchers (Figure 4).

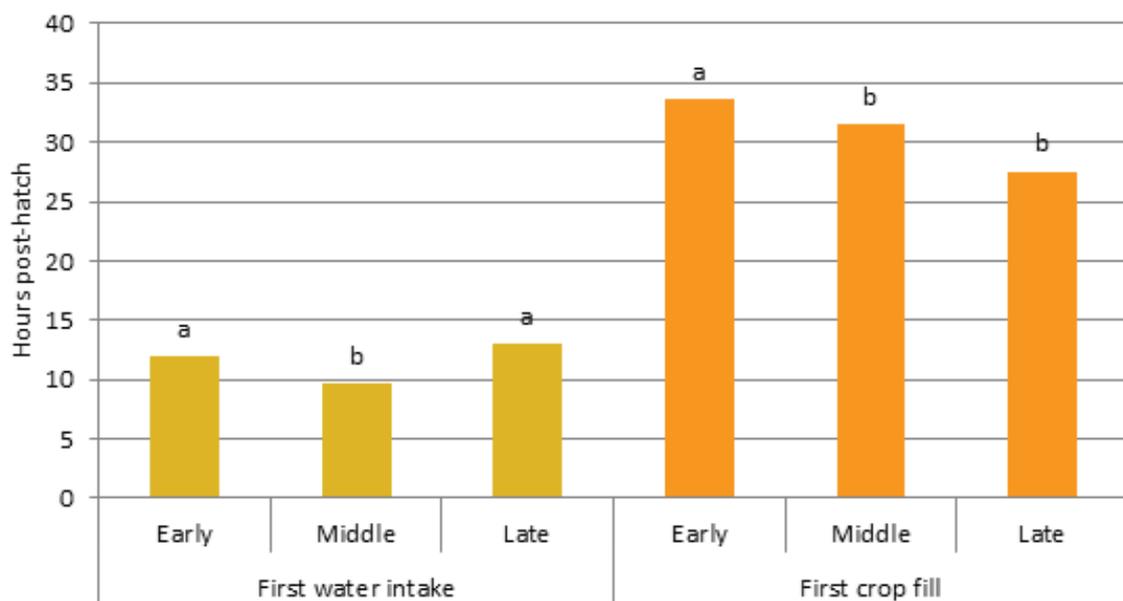


Figure 4. Average moment of first water intake and crop fill post hatch for chicks that hatched early (≤ 477 hours of incubation), middle (478 - 486 hours) and late (≥ 487 hours)

Possibly, this was partly due to a learning effect: the later hatchers could see other chicks eat and drink. By pull time, 93% of all chicks had started to eat large volumes of feed. On average, chicks consumed 3.6 g of feed between hatch and pulling time.

Traditional hatcher vs. HatchCare

At hatch, body weights did not differ between HatchCare and traditional hatcher chicks (Figure 5). At pull time, all traditional hatcher chicks had lost weight due to dehydration, with largest body weight loss for early and middle hatchers. Early and middle hatched HatchCare chicks, on the other hand, had gained weight through feed and water intake. Body weight gain was highest for the early hatchers in HatchCare, who had the most time post hatch to start feed and water intake.

Conclusions

Chicks in a traditional hatcher lose weight the longer they stay in the hatching environment. This weight loss is mostly due to dehydration. However, water is necessary for many physiological processes. As a result, early hatchers are typically the weakest chicks and this is reflected in later performance. However, future performance is damaged not only by dehydration. The absence of feed and lack of nutrients in the intestines of a traditionally hatched chick will retard further development until chicks are placed at the broiler farm.

In HatchCare, all chicks benefit: all chicks eat a few pellets of feed and start water intake before pulling time. Nearly all chicks start to consume large volumes of feed, providing an adequate supply of nutrients for development before they have even left their hatching environment. By providing feed and water, optimal development of each hatchling is ensured.

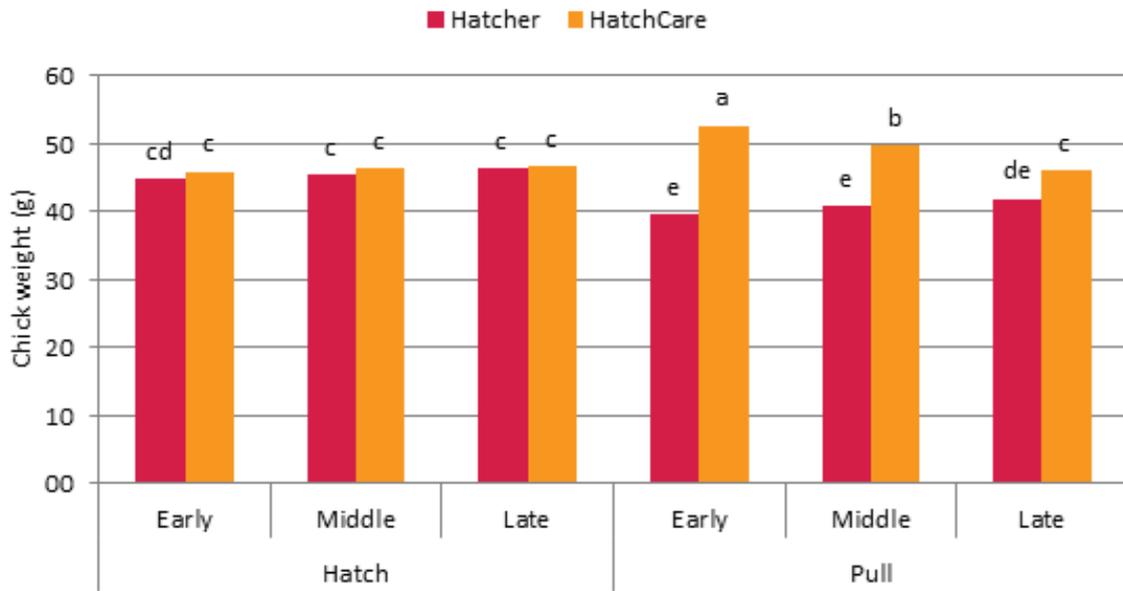


Figure 5. Body weights at hatch and pull time for traditional hatcher and HatchCare chicks hatched early (≤ 477 hours of incubation), middle (478 - 486 hours) and late (≥ 487 hours)



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