

On-farm hatching

A living-lab approach in conventional broiler production

On-farm hatching allows chicks to hatch directly in the broiler house with immediate access to feed and water, avoiding handling and transport immediately after hatch. A commercial field study conducted within the INTAQT project showed that this practice improves broiler welfare and technical performance, with reduced footpad dermatitis, better feed efficiency, earlier market weight and greater flock uniformity. These benefits were obtained without increasing White Striping, Wooden Breast or Spaghetti Meat, while technological meat quality tended to improve.

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The first hours after hatching are critical for chick development. In conventional hatcheries, chicks may remain without feed and water for several hours while hatching is completed, birds are sorted and vaccinated, and transport to the farm is organized. These events may delay early development and expose chicks to unnecessary stress.

On-farm hatching offers an alternative management strategy. Eggs are transferred to the broiler house approximately three days before hatch, allowing chicks to emerge directly in the production environment with immediate access to feed and water. This system eliminates transport immediately after hatching and may improve both bird welfare and production efficiency.

Although encouraging results have previously been obtained under experimental conditions, evidence from commercial farms has remained scarce. Within the INTAQT project, a large-scale field study was therefore conducted to evaluate the impact of on-farm hatching on broiler welfare, health, technical performance and breast meat quality.



Fig 1: Chick hatching

Thirty commercial Ross 308 broiler flocks belonging to the same production organization were monitored throughout the production cycle. Fifteen flocks were conventionally hatched in a hatchery, while fifteen flocks were hatched directly on the farm using the NestBorn® system (Figure 2). All flocks were managed under comparable commercial conditions, received feed from the same feed mill and were slaughtered at the same target body weight, allowing differences to be attributed primarily to the hatching system. Animal welfare, health status and technical performance were evaluated throughout the growing period. In addition, breast meat quality was assessed after slaughter by evaluating the prevalence of muscle abnormalities and, in a subset of five farms per condition, by measuring technological quality traits using laboratory-based methods.



Fig 2: Eggs set on the litter before hatching

Providing chicks with immediate access to feed and water after hatching resulted in clear benefits throughout the production cycle. Birds hatched on-farm showed a markedly lower prevalence of footpad dermatitis both during the first week of life and at slaughter (Figure 3) indicating better litter conditions and improved welfare. Overall welfare scores were comparable between production systems, but behavioral observations revealed that birds hatched on-farm expressed more exploratory behavior, preening and stretching activities. These behaviors are generally considered indicators of better comfort and a greater opportunity to express natural behavior.



Fig 3: Prevalence of footpad dermatitis at slaughter

In the European context, where animal welfare and health are key priorities for the poultry sector, demonstrating that a farming practice can simultaneously improve animal welfare, technical and economic performance, without compromising product quality represents a major opportunity for farmers and the entire poultry value chain.

From a production perspective, the advantages were equally evident. On-farm hatched chicks were already around 20 g heavier at seven days of age and maintained this early advantage by reaching the target slaughter weight approximately 1.3 days earlier than conventionally hatched birds. They also achieved a higher average daily gain, a better feed conversion ratio and greater flock uniformity at slaughter, resulting in a significantly higher production index.

The improvement in feed efficiency represents a practical benefit for producers. For a typical commercial flock of approximately 25,000 birds, the reduction in feed conversion corresponds to roughly one ton less feed consumed during the production cycle, representing savings of around €500 while simultaneously improving overall production and environmental efficiency.

Key messages:

Early access to feed and water improves chick development from the first days of life.

On-farm hatching enhances welfare by reducing footpad dermatitis and encouraging natural behaviors.

Broilers reach market weight earlier while improving feed efficiency and flock uniformity.

Improved production performance is achieved without increasing White Striping, Wooden Breast or Spaghetti Meat.

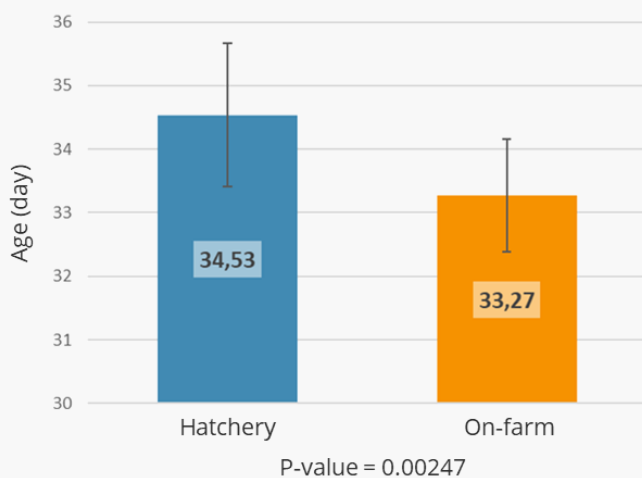


Fig 4: Average age at slaughter weight (1.9 kg)

	Hatchery	On-farm
Weight at slaughter	13.30%	12.39%
Breast meat yield	1.32%	0.57%

Fig 5: Flock uniformity based on the standard deviation of body weight and breast meat yield at slaughter

Rapid growth is often associated with concerns about breast muscle abnormalities such as White Striping, Wooden Breast and Spaghetti Meat. However, in the present study, the improved growth and production efficiency achieved with on-farm hatching were not accompanied by an increase in the prevalence or severity of these defects. Breast meat also tended to show better water-holding capacity and higher technological yield, suggesting potential benefits for processing. Although these latter findings, obtained under laboratory conditions, need to be validated under commercial processing conditions, the results suggest that improving early-life management through earlier access to feed and water can enhance broiler performance without compromising breast meat quality and may even improve some technological properties of the meat.

In conclusion, although on-farm hatching currently involves additional costs that may exceed the direct economic benefits, notably due to the absence of a specific premium in the purchase price of birds, the practice remains promising. Its wider adoption will require an appropriate economic model that accounts not only for the additional costs at farm level, but also for the investments and structural adaptations required in hatcheries. Developing value-sharing mechanisms across the supply chain could help recognize the benefits associated with improved animal welfare, health and production performance, and support the broader uptake of on-farm hatching.

A major achievement was the co-design of the study with stakeholders across the poultry value chain, from hatcheries and feed companies to producers, slaughterhouses and processors. This collaborative approach combined industry expertise and scientific knowledge, fostering dialogue between highly interdependent sectors.

The results show that investing in on-farm hatching at the start of the production cycle can generate benefits throughout the value chain, improving animal welfare, production efficiency and meat quality.

They also highlight the opportunity to share costs and benefits among stakeholders rather than concentrating them at a single stage.

Farmers strongly supported the system throughout the project. Together with the positive sustainability outcomes, this engagement provides a solid basis for wider adoption and could contribute to improving societal acceptance of broiler production.



Fig 6: On-farm-hatched chicks



Fig 7: Standard broiler



Fig 8: Chicken breast fillet