

Practice abstract

On-farm hatching in organic and low-input outdoor farms

Problem

The transport of small batches of one-day chicks from the hatchery to the organic farm can cause stress and dehydration due to delay before feed and water supply.

Solution

Deliver 18-day incubated eggs and conclude the incubation on farm. Feed and water are directly available for newly hatched chicks, reducing risks of weight loss and dehydration and limiting stress from manipulation and transport.

Benefits

- Advantages for farmers far from hatcheries or farmers with small flocks for which delay can be higher
- Avoid chick transport and reduce manipulation¹
- Better chick quality scores² and welfare post-hatching with accessible feed and water when the chick is ready
- Good performance in outdoor farms, with necessary adjustments required on small-scale organic farms
- Higher farmer satisfaction – on-farm know how
- Higher resilience as shown by lower antibiotics use³

Practical recommendations

- Fine-tune the temperature around the eggs to be 33 to 36°C to keep the eggshell temperature around 36-37°C (or 97-98°F, better control using Fahrenheit scale) using for example laser thermometer to check different spots. Constant monitoring and regulation of environmental temperatures is essential
- Prefer ambient heating (such as gas cannon heaters) to localised heating (such as gas or electric radiant heaters). Thanks to its progressive regulation, gas heaters avoid the sudden variations in temperature that can occur with some electrical equipment
- For a 5KW radiant heater, the optimum settings are to place the radiator at a height of 2.20 m with a set point of between 34 and 35°C, and a probe placed on the eggs (automatic regulation) and about 40 centimetres above the heater. If the heaters are more powerful or they are installed at a height of less than 2.20 m, the eggs must be kept away from the heating source. If the areas on the floor between two radiant heaters are close, the emitted heat adds up in these areas, causing overheating of eggs (Picture 1)
- Adapting the systems to the farm building and heating system; In small chick house, a heating blanket with a moderate electric heater can be set at around 34.5°C and eggshell temperature frequently controlled
- Litter recommended depends on the floor: around six cm height of wood chips or crushed straw or straw pellets on concrete floor; provide thicker litter on clay floor
- Avoid draught on the egg surface (cooling)
- Order 18-day old, vaccinated eggs from the hatchery or perform vaccination on-farm on day one (in this case, coccidiosis vaccination must be carried out at the farm)
- Take advantage of warmer seasons to reduce energy costs but have a cooling device if temperatures raise

Applicability box

Theme

On-farm hatching, one-day old chicks, slow-growing breeds, organic and outdoor production systems

Keywords

Animal welfare, transport of animals, hatching, broiler chickens, feeding and nutrition

Context

Applicable everywhere

Application time

Three days ahead the usual arrival of the chicks

Required time

About +15% for setting of eggs, temperature surveillance and on-farm chick vaccination

Period of impact

Recommended in warm-hot seasons for limiting energy costs but beware of heatwaves

Equipment

Gas radiant or heating blanket with moderate/ventilating electric heater and on-farm hatching commercial device

Best in

Well-insulated chick facilities

Constraints

- Reduced duration of the sanitary break (three days)
- The barn has to be heated for three extra days, which means additional energy costs
- Transfer of the vaccination can be a burden to the farmer if not possible *in ovo* at the hatchery
- Consider the maximal chick density and space/chick based on organic regulation during the placement of the eggs, with hatchability of candled eggs found between 89.6% and 97.0% registered on-farm in France and Germany
- No control of the sex ratio
- Additional work time for farmers, i.e. setting eggs, removing unhatched eggs and sorting chicks



Picture 1: Placement of gas radiators and of One2Born egg trays in commercial poultry barn with outdoor access (ChickBoom and PPILOW projects, ITAVI). Photos: ©Yann Guyot, ITAVI



Picture 2: Hatching happening on-farm, with water and feed directly available for the chicks (PPILOW project, INRAE). Photo: ©Anne Collin, INRAE

Picture 3: Warm water convector for heating barn, majority of chicks have hatched (hatchholders on the right) (PPILOW project, Thünen-Institute). Photo: ©Helen Pluschke, Thünen-Institute

Further information

Videos

- [PPILOW webseries #7 on-farm hatching](#)
- [Webinar in French about on-farm hatching](#)

Other suggested videos available

- [On-farm hatching one2born \(FR\)](#)
- [On-farm hatching nestborn device \(FR\)](#)
- [On-farm hatching Xtreck device \(FR\)](#)

Further reading

- 1- Van de Ven LJF, van Wagenberg AV, Debonne M, Decuypere E, Kemp B, & van den Brand H. 2011. Hatching system and time effects on broiler physiology and posthatch growth. *Poult. Sci.*, 90(6), 1267-1275. <https://doi.org/10.3382/ps.2010-00876>
- 2- Tona K, Bamelis F, De Ketelaere B, Bruggeman V, Moraes VM, Buyse J, Onagbesan O, Decuypere E. 2003. Effects of egg storage time on spread of hatch, chick quality, and chick juvenile growth. *Poult. Sci.*, 82(5), 736-741. <https://doi.org/10.1093/ps/82.5.736>
- 3- Jerab JG, Chantziaras I, Van Limbergen T, Van Erum J, Boel F, Hoeven E, Dewulf J. Antimicrobial Use in On-Farm Hatching Systems vs. Traditional Hatching Systems: A Case Study. *Animals (Basel)*. 2023 Oct 19;13(20):3270. doi: 10.3390/ani13203270

Weblinks

- www.ppilow.eu
- Check the Organic Farm Knowledge platform for more practical recommendations.

About this practice abstract

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Permalink: [Organic-farmknowledge.org/tool/53693](https://organic-farmknowledge.org/tool/53693)

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