

On-Farm Hatching Egg Storage

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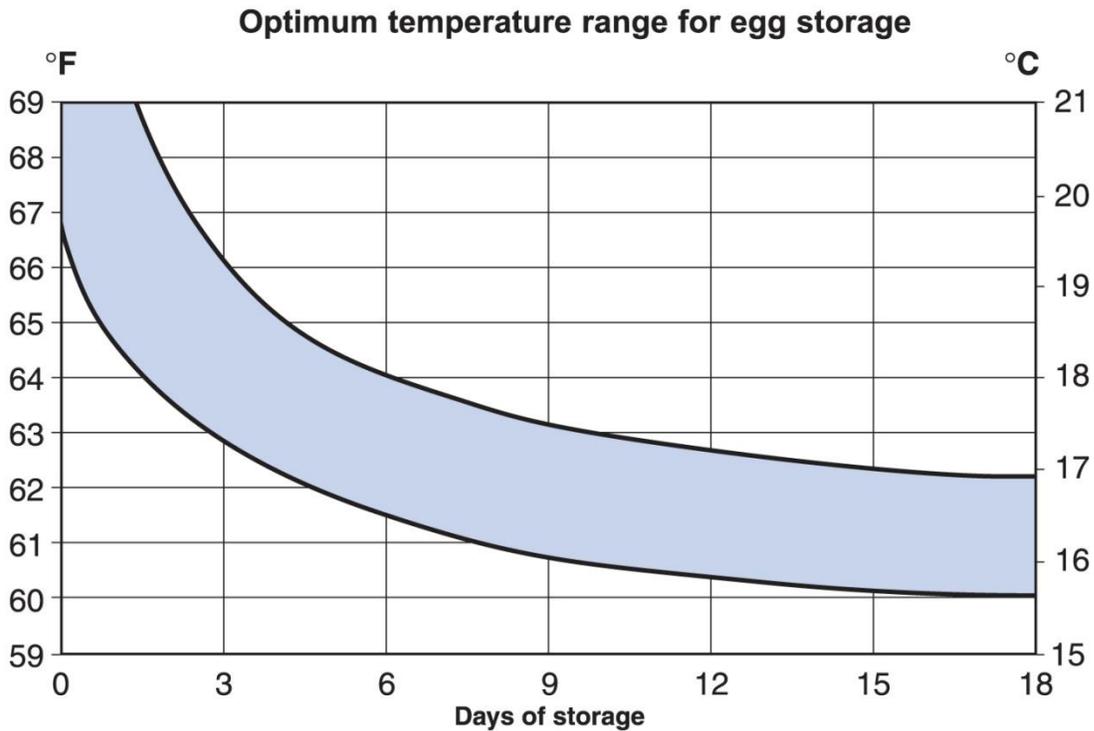
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The poultry industry, as a whole, is comprised of many segments, each with varied levels of importance. Each of these segments must be closely managed and controlled in order to maintain any gains and improvements made in other areas of the entire poultry operation. For example, it is well known that most hatchability problems are a result of poor fertility. However, when egg production is attained and the flock maintains high levels of fertility, how we care for hatching eggs can have a tremendous effect on overall hatchability. In the production of game-birds, many of these same principles apply and can be adapted from what has been learned from the poultry experts.

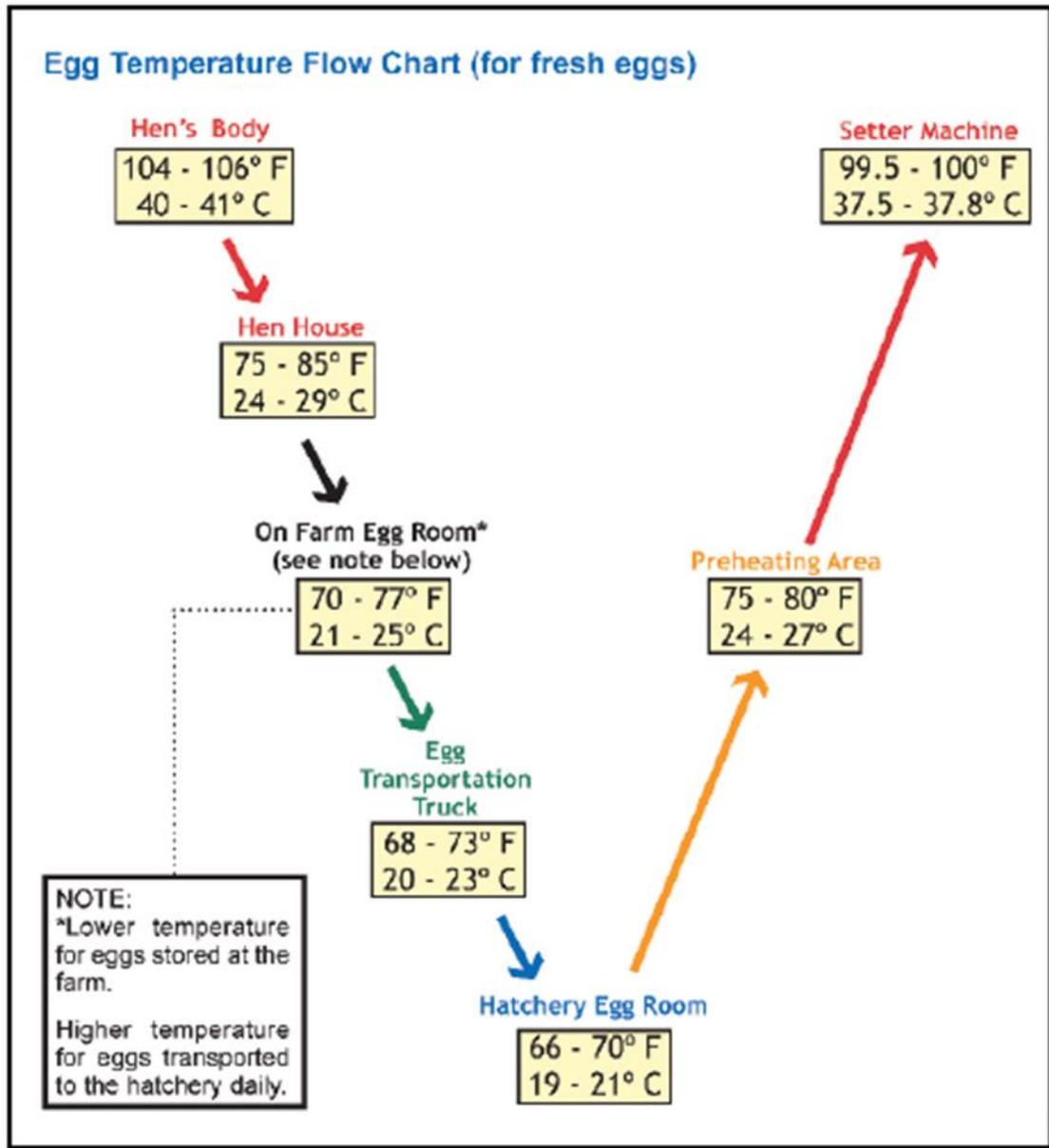
Two areas often neglected that can have a tremendous affect on the overall success of the operation and they are hatching egg storage and day old chick transport. If mismanaged, these two areas can cause losses in hatching egg or chick quality that can negate the benefits of money spent and improvements made at the breeder farm or in the hatchery itself.

Chicken hatching eggs are commonly held in storage facilities at the breeder farm anywhere from one to four days and again at the hatchery until placed in the setters. Variations of this system are also in place in many developed game-bird operations. In an effort to better understand the egg we are preserving for later incubation, it is important to understand its developmental state at the time is laid. The avian hatching egg is fertilized immediately after it is ovulated in the hen so after this point embryo growth is initiated and continues to occur during the formation of the completed egg prior to oviposition (egg laying). Therefore, at the time the egg is laid it has undergone a form of pre-incubation or embryo development during that period of complete egg formation in the hen. Once the egg is laid and during the egg storage period, efforts should be made to reduce or control additional pre-incubation. While an egg storage temperature of 68°F (20°C) is the most commonly practiced industry recommendation for poultry, the actual on-farm egg storage temperature can range from a low of 60°F (15.6°C) up to 75°F (23.9°C).

The range in egg storage temperature from one farm to the next is often due to different management programs, while day-to-day fluctuations within the same company is a result of poor egg storage facilities that are unable to maintain a constant storage temperature.



Since the embryo never really stops developing during egg storage, each time the internal temperature of the egg is increased, metabolic activity is increased and embryo development increases only to be slowed again during additional egg cooling. While cooling hatching eggs is necessary, starting and stopping embryo development weakens the embryo and reduces its viability. The ideal situation is for hatching eggs to undergo only two temperature direction changes; one from the hen to the lowest temperature point at the commercial hatchery egg storage facility and the second temperature direction as eggs are moved into the egg setters.



While the industry recommends storage temperature of 20 C, actual on-farm storage temperature can range from 15.6 C to 23.9 C.

While current industry recommendations vary from 63°F (17.2°C) to 70°F (21.1°C) for on-farm egg storage, data indicates that variations in on-farm egg storage temperatures of as little as 2°F (1.1°C) can reduce hatchability by as much as 3.5%. Therefore, regardless of the equipment in the breeder production house and the hatchery facilities, hatchability is routinely lost in commercial hatcheries due to neglect of the on-farm egg storage facilities.

Transportation of Baby Chicks

Transporting day old chick from hatchery to farm plays a very vital role in the subsequent performance of the bird. However, transport conditions are still too often neglected, when in fact they have the potential to significantly affect livability, growth rate, performance, and development of the immune system.

The chicks are normally transported in specially designed disposable carton boxes when going to long distance destinations – provided that temperature inside the chick boxes is kept within their thermoneutral zone or optimal environment. Within this narrow temperature range of 32 - 35°C (90-95°F), the chick's metabolism is at maintenance level with minimal heat production and water loss.

A newly hatched chick cannot fully self-regulate their body temperature. So if the temperature inside the chick boxes varies from the 32-35°C range (90-95°F), the chicks will start using up the nutrients from the yolk sac at a much faster rate in an attempt to maintain their core temperature ranges between 40-41°C (104–106°F). A core temperature above 41°C (106°F) post hatch will lead to panting resulting to water loss with the risk of dehydration and below 39.5°C (103°F) will lead to reduced activity and low feed consumption.

RECOMMENDATIONS

- As much as possible, chick travel time from hatching to placement should be no longer than 48 hours
- Maintain a temperature of 32-35 °C (90-95°F) inside the chick boxes by optimizing both the temperature of circulating air and its velocity.
- Chicks should be transported with nutrient supplies to promote well-being.
- Work quickly during the critical process of loading and unloading when no forced ventilation is present and/or provide sufficient space between individual chick boxes.
- Use a stacking configuration and adequate spacing to assure proper ventilation during transport.
- Adjust the number of chicks per box if optimal temperature inside the chick boxes cannot be achieved due to limitations in transport equipment.