

# On Farm Hatching as a New Technique for Hatching Eggs System

Osamah Mohammed Abdullah

*Department of Animal Production, College of Agricultural Engineering Science, University of Baghdad, Iraq*

*Email: [osamah1986@yahoo.com](mailto:osamah1986@yahoo.com)*

***Abstract: The egg hatching process in the Poultry house has a great role in providing food and water directly at hatching, as well as providing wide areas for movement and providing fresh air, and there is no need to transfer the hatched chicks from the hatcher to the Poultry house. In this process, the eggs incubated for 18 days in the setter were transferred to the poultry house, taking into account the environmental conditions in which the transportation process takes place, as well as preparing the houses as an integrated system where the chicks would remain throughout their life cycle from the moment they hatch until reaching the slaughter weight. Hatching in poultry houses has improved results compared to traditional hatching systems, as follows: Chicks do not transfer from hatcheries to poultry houses, but in this system, the hatching process takes place in the poultry houses, which leads to the chicks being able to drink water and feed directly. In this system, chicks get better organ development and increased immunity. Providing good environmental conditions for chicks at the moment of their hatching involving oxygen, a wide area for movement, and a lack of moisture. During the hatching process in the poultry houses, the basic environmental conditions must be provided for the broilers, as when the chicks hatch, the temperature should be as homogeneous as possible, and the floor temperature must be warm to prevent the chicks from getting cold, as well as sometimes humidity is required, especially during the eggshell cleaning.***

***Keywords: On farm hatching, hatching eggs system, poultry industry***

## **1. INTRODUCTION:**

The progress in the poultry industry may be according to the changes in modern techniques. The poultry industry developed a great deal. However, there are a lot of problems that occur during transferring the eggs from the setter to the hatcher, besides the long duration of hatching that results in staying the early hatched chicks in the hatcher for a longer time which exposes them to harsh conditions of heat, humidity, and less ventilation (Hedlund et al, 2019).

Researchers thought about this domain by placing the hatched chicks under the wide hatching window, so they would be under perfect conditions and a suitable environment for supplying them with feed and water immediately after hatching. Hatchcare system was among these thoughts which, in its turn, would attain the appropriate conditions. (Hatchability, 2017).

The idea was converted into a commercial scale by Vencomatic Company, where they developed a multi-tiered breeding system and named it Poultry Best System. This system comprises four floors whose internal temperature can be controlled with a high level of

precision. Reaching the temperature of 34 degrees Celsius, accompanied by a decrease in air velocity, the temperature of the eggshell reaches 37.8 degrees Celsius (Hatchability, 2017).

### **The hatching system**

There are many problems accompanying transferring eggs from the setter unit to the hatcher unit till the end of the hatching. Among them is extending the hatching window resulting in staying the early hatched chicks in the hatcher for a longer period and exposing them to harsh conditions such as temperatures, humidity, and poor ventilation, besides their delay to obtain feed and water (Hedlund et al, 2019). As well as, the chicks that hatch late would not be able to dry easily, as they would be transferred to the farm immediately after hatching, resulting in severe consequences due to the incomplete healing of the umbilicus and lack of dehydration, leading to many pathological factors (Van den Brand et al, 2019) that will be a cause for the infection of the other chicks with pathogens. To avoid the obstacle of the 24-36 hour hatching window, the brothers Kuijpers (1998), working for Het Spelderholt, Beekbergen in Holland, suggested the idea of hatching eggs outside the hatcher machines. They proposed the chick mother system (figure 1), in which the eggs are placed on the ground during the last three days of the hatching process as the chicks reach the feed and water directly after hatching. In this system, contamination would be reduced in comparison to the traditional hatcher, accordingly, the stress that the chick faced through transferring from the hatcher to the boxes as well as through transportation is eliminated (Hatchability, 2017).



Figure 1 The Chick Mother system (Hatchability, 2017).

### **Problems resulting from staying chicks inside the hatcher:**

There are many factors inside the hatcher, including temperature, humidity, and ventilation affect the chicks' goodness, for instance, hatching way, chick activity, yolk sac withdrawal, umbilical closure, as well as, affect the subsequent productive performance of broilers (Willemsen et al, 2008). Delaying chicks transfer increases the mortal percentage of the broilers chicks hatched that early (Jacobs et al, 2017), as well as weakens their performance after hatching (Brouvcek, 2014).

### **Open hatching types**

#### **A. Patio system:**

Several commercial systems of hatching differ in their design and performance. The patio was the first system introduced as an alternative system for hatching inside the hatcher during the final three days. It is one of the systems used to combine the hatching and raising stages, which gives the hatched chicks a direct reach to the feed and water (Van de Ven, 2009).

#### **B. On-farm Hatching system:**

This system is more comfortable than the first one. It does not have moving tracks inside the hall as hatching eggs are placed either on the ground or in egg plates, therefore it is called “Hatching on Farm” where the hall temperature is 35 degrees Celsius and humidity ranged from 34 to 40% with constant air velocity and continuous lighting 24 hours (Hatchability, 2017).

### **Advantages of on farm hatching**

- 1- The possibility of chicks reaching the feed and water immediately.
- 2- Rapid reaching the feed and water has a lot of advantages for developing the gastrointestinal tract and constructing a healthy immune system. (Van de ven et al, 2009).
- 3- Avoiding the stress caused by transportation.
- 4- Hatching in the healthy air results in producing strong chicks (Van Brecht et al, 2003).
- 5- Hatching in the traditional system ends on the 21.5th day, while it continues for more hours in the open hatching system beyond the 21.5th day letting the late chicks hatch and thus increasing the hatching percentage (De Jon et al, 2019)
- 6- Not transferring chicks leads to more profitability in broiler production (Jacobs et al, 2019)
- 7- Decreasing the skin inflammation of the footpad.
- 8- High quality of the waste.
- 9- Reducing the number of the dirty chicks.

### **Disadvantages of the on farm hatching**

- 1- Chicks hatched in the open hatching system are generally characterized by the bad-health umbilicus (De Jong et al, 2019).
- 2- It needs halls with high ceiling height to facilitate the movement of carts and egg carriers.
- 3- Sexing difficulty, in case of requesting a flock of males or females.
- 4- More workers should be available to collect the unhatched eggs, i.e. damaged ones, put them outside, and keep the hatched eggshells in the natural manure to be removed with the waste.
- 5- Farmers need three extra days for hatching eggs on the farm instead of utilizing this time for growth, and thus they lose three days of raising time which adds cost for the producer (Islam et al, 2018).
- 6- This system takes a long time and needs intensive laborers.

## **2. CONCLUSIONS**

Using an open or patio hatching is a multi-level system that allows the hatched chicks to feed immediately after hatching.

Chicks hatched within the open or patio system recorded significant body weight at the age of seven days and a lowering in the mortality rate during the first week.

This system provides extra hours for hatching the late chicks raising the hatching percentage compared to the traditional hatching system.

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