



# KESHABSON INCUBATORS & MACHINERY

EGG HATCHING & A2Z



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# KESHABSON INCUBATORS & MACHINERY

## EGG HATCHING & A2Z

### Egg Selection:



### Tips for selecting the best fertile eggs for hatching:

1. Keep your nests clean so you have clean eggs.
2. Choose eggs that are free of dirt, litter and yolk or white from broken eggs.
3. Always remember that the Male Female ratio of parent stock should be 1:5.
4. Don't select eggs from hot nests or those in the sun.
5. Choose eggs that are 1.4 times longer than they are wide.
6. Avoid misshapen or elongated eggs.
7. Select only eggs of good shape and of medium size, discarding very large and very small eggs.
8. Avoid those with fragile, porous, crinkled or rough shells.
9. Proper egg & improper eggs are shown in the above figure.

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## EGG HATCHING & A2Z

### Storage of Eggs



The eggs must be collected carefully and stored properly until they are incubated.

**Days of storage:** Storing eggs for at least 03 days helps prepare them for incubation, however fresh and stored eggs should not be set (put into incubator) together. It is best to incubate eggs within 07 to 10 days of their being laid. Hatchability decreases rapidly when eggs are stored for more than 10 days.

**Temperature:** Fertile eggs should be stored between 13-19 degrees Celsius. If the temperature reaches above 27 degrees Celsius, embryos will begin to develop abnormally, weaken and die. Below 8 degrees Celsius embryo dies.

**Humidity:** Fertile eggs should be stored at 60% – 70% relative humidity. High humidity would cause condensation and clog the pores on the eggshell, which in turn would suffocate the embryos. Low humidity would decrease the internal moisture and kill the embryo. It is recommended to increase and decrease the surface area of the water bowl to keep a check on the humidity of the storage area/ container.

#### Recommendations:

- a) More than 3 days, less than 10 days (best if before 7 days).
- b) Temperature between 13-19 degrees Celsius.
- c) Should be stored at 60% – 70% relative humidity

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### Cleaning of Eggs



Collected eggs may be cleaned using water & potassium permanganate solution. Gently rub the surface of the eggshell using a clean cotton cloth damped in water & potassium permanganate solution. Do not dip the eggs in the water. These will clog the pores of eggshell. Harsh on rubbing the eggshell may remove the egg's protective layer and allow disease and bacteria to enter. Egg cleaners available in the market may also be used to clean the surface of the eggs.

#### Recommendations:

- a) Discard – broken, misshapen, soiled eggs
- b) Use Water +Potassium permanganate solution
- c) Use clean and cotton cloth
- d) Do not dip the eggs in the water or any solution
- e) Keep the eggs dry as much as possible

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### Cleaning, Sanitization & Fumigation of Machine



Microbes in an incubator can significantly reduce hatchability. Cleaning and disinfecting the incubator chamber, setting trays, racks, etc. is essential to reduce the risk.

Before and after starting a batch the egg incubator machine has to be cleaned and sanitized. For cleaning the machine – Potassium permanganate solution can be used. The solution is to be wiped out and dried properly.

In addition to cleaning and sanitizing the machine fumigation is also to be done to reduce the microbial load over hatching eggs. The mixture of potassium permanganate and formaldehyde is used to fumigate the incubator chamber. Fumigation is to be done at least 01 hour before setting the eggs into the incubator.

#### Recommendations

- A. Cleaning and sanitization: a) Hydrogen Peroxide,  
b) Potassium permanganate solution
- B. Fumigation: Potassium permanganate + Formaldehyde

Wash hands before touching eggs. Keep germs, dirt and oil away from the incubating eggs.

# KESHABSON INCUBATORS & MACHINERY

## EGG HATCHING & A2Z

### Incubation of Eggs (Humidity, Temperature, Turning, Ventilation) Recommendations



### Recommendations

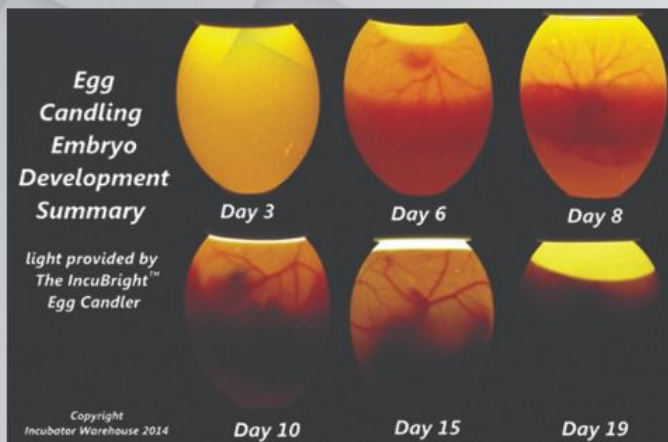
Species	Incubation condition			Hatching condition		
	Days	Temperature	Humidity	Day to stop the turning	Temperature (°C)	Humidity (%)
Chicken	19-22 days	37.4 C	55-60%	18 <sup>th</sup> day	37.4	60-65
Duck	25-30 days	37.4 C	60-65%	24 <sup>th</sup> day	37.4	65-75

- Ventilation has to be proper and Humidity has to be increased up to 65 –75 % towards the hatching stage
- It is a good practice to record the data regularly.

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### DAYS 7-10: CANDLING EGGS



Towards the middle of the incubation period at 7 to 10 days, eggs can be candled to determine if the embryos are growing properly.

Candling is the act of simply shining a light through an egg. White and light-colored shells are the easiest to candle, while darker shells will require a brighter light. The simplest way to candle an egg is with a basic flashlight. Do not keep the egg out of the incubator for more than 5-10 minutes, and don't candle the eggs all at once. To allow the eggs to stay inside the incubator, plan to candle a few at a time.

To understand what you are looking for while candling eggs, read the following description -

- If the inside of the egg is clear - that is, free from visible structures or dark areas - the egg is infertile, or the embryo died very early. Remove this egg from the incubator.
- If a ring of red is visible within the egg, there was an embryo at some point, but it has died. Remove this egg from the incubator.
- If you can see blood vessels within the egg, there is a live embryo inside. Blood vessels in chicken eggs are normally observable within 7 to 10 days of an egg's incubation. By 18 days of incubation, the embryo takes up most of the egg and appears as a dark area within the egg. You can sometimes see movement inside the egg.

After candling, return eggs to the incubator and return to the day 1-18 turning schedule.

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### HATCHING DAYS:



#### **DAYS 18-21: PRE-HATCHING**

- Stop egg-turning at day 18. At this point, the chick will position itself for hatching inside the egg.
- Maintain a temperature of 37.4 degrees Celsius but increase humidity to 60-65 percent.

#### **DAY 21: BABY CHICKS START HATCHING**

Chicks will typically hatch at day 21. If the fertilized eggs were cooled prior to incubation, the process might take a little longer. If you are at day 21 with no hatch, give the eggs a few more days.

When the big day comes, let the chick hatch on its own. Do not attempt to help. Blood vessels that haven't dried up yet may still attach the shell to the chick, and prematurely pulling of the shell can cause excessive, potentially fatal, bleeding. A chick can take up to 24 hours to completely hatch, although 5-7 hours is more common.

The peeping of the new baby chicks will encourage un-hatched eggs to also start hatching. When the chicks have all hatched, the incubator temperature can be lowered to 36.5o Celsius. Once the chicks have dried, they can be moved into the brooder, which should already be up and running with a temperature of 35-36° Celsius. Food and water should be in place as well.

If there are still un-hatched eggs at day 21, don't despair, wait till 23rd day.



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## BROODING:








A newly hatched chick does not develop the thermoregulatory mechanism fully and takes about 02 weeks to develop this mechanism. Therefore, they cannot maintain the body temperature properly for the first few weeks of life; and may be subjected to chilling, if not properly taken care of.

Naturally, a broody hen sits over the newly hatched chicks for about 3-4 weeks. In artificial brooding, a large number of baby chicks are reared in absence of broody hen. Brooders are used to create a similar kind of ambiance that a mother bird creates.

This artificial brooder comprises– a) Heating source b) Reflectors c) Brooder guard. The recommended temperature to be maintained during the brooding period is

### Listen to the Chicks

- Too Hot**  **Little noise  
Panting  
Wings extended**
- Just Right!**  **Even distribution**
- Too Cold**  **Crowding under heat source  
Distress calling**
- Draft**  **Uneven temperature distribution  
Check surrounding area**



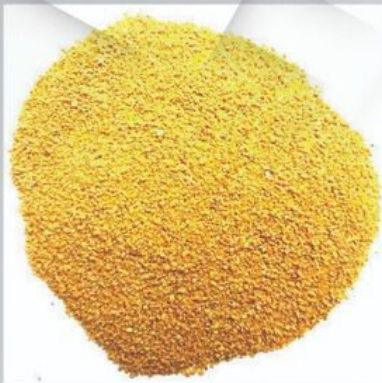
Week(s)	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
Temperature(°C)	34	32	30	26

Brooding the newly hatched chicks from the incubator as per the given temperature chart will significantly reduce mortality.

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### Feeding: (Different Feeds at Different Stages):



Pre-Starter feed (0 days to 2<sup>nd</sup> week)



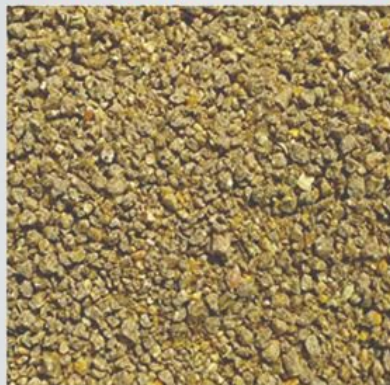
Starter Feed (for 3<sup>rd</sup> to 8<sup>th</sup> week)



Feeder for Feed



Finisher Feed (from 8<sup>th</sup> week)



Layer Feed (From 8<sup>th</sup> week)



Drinker to feed water

- Pre-starter feed (High Protein for better growth) - From day old chick or duckling to 2nd week of ages.
- Starter feed (18% protein) – From 3rd week to 8th week.
- Finisher Feed (16% Protein) – If you want to raise your chickens or ducks for meat purpose, then after Starter Feed, you have to feed them with Finisher Feed. (8th weeks onwards...)
- Layer feed->>
  1. Layer Phase I – From 8th week to 16th week.
  2. Layer Phase II – From 17th week & onwards.
- If you buy the feeds from market, it's good as here all the essential nutrients are mixed in well ratio.
- If you are making feed by yourself, then kindly care about the protein, carbohydrate, fats, minerals, vitamins etc.
- It is a good habit, if you feed your chickens with extra vitamins & minerals by mixing in water or feed. It will improve their immunity & growth rate.

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**\*\*Always use clean drinker & feeder to feed your chickens & ducks.  
Always clean yourself before going to feed them. \*\***

### Summary

1. Egg incubator – This is a kind of machine where we can hatch chicken/duck and various types of eggs.
2. Egg Incubator has four most important factors. Those are – Temperature, Humidity, Egg turning & Ventilation.
3. The temperature should 37.0 - 37.5 degree Celsius in the Incubator.
4. The humidity should 55-65 % for chicken eggs.(65% for 18th to 21st day/ last days)
5. The humidity should 60-75% for duck eggs.(75% for 24th to 28th day/ last days)
6. The egg should be turned for minimum 5 times a day. (It will automatically rotate.)
7. You have to check the incubator as it is working properly or not before setting the eggs.
8. To ensure the best fertility rate, you should keep the ratio of Rooster and Hen as 1:5 respectively.
9. The laid eggs should be cleaned & kept in cool environment where air can be passed properly.
10. Egg should be cleaned by Potassium Permanganate or Egg cleaners available in the market.
11. The size of the eggs should be normal (Not bigger, not smaller, not round, not pointy etc).
12. Before setting the eggs inside the Egg Incubator, you must clean the inner side of the Egg Incubator with Potassium Permanganate or you can use Formaldehyde solution.
13. After Setting the Eggs inside Egg Incubator, you always check the water level inside the water container for humidity.
14. Be sure that Rotation/Turning Switch is on.
15. You must switch off the turning switch at 18th day in case of Chicken Eggs.
16. You must switch off the turning switch at 24th day in case of Duck Eggs.
17. Chickens are generally hatched in 21 days. But wait till 23rd Day.
18. Ducks are generally hatched in 28 days. But wait till 30th Day.
19. After hatching, you keep the chicks or ducklings inside the egg incubator for 24 Hours.

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20. After 24 hours you keep the Chicks/Ducklings inside brooder.
21. For summer season the brooding period is about 14 days, whereas 21 days in winter.
22. You can make the brooder using Aluminium Plan sheet and providing heating bulb over it.
23. Weekly decrease the brooder temperature by 2 degree Celsius. (You can do this by adjusting the height of the heating bulb).
24. You should provide Pre-Starter feed to Day old Chicks to 14th day old chicks.
25. You should provide Starter feed for 15 days – 2 months.
26. For Layer Bird next you use Layer feed after 2 months.
27. For meat purpose chickens, you use finisher feed till the selling time.
28. Always clean the drinker & feeder before & after using.

