

Hatching Eggs at Home

Hatching Eggs at Home Can be Fun and Educational

Hatching eggs at home can be a rewarding way to increase the size of your flock, while teaching family and friends about embryology. Chicken eggs are the most common eggs to hatch but eggs from other species can be incubated as well (Table 1). Before starting a hatching project, make sure you have everything in place to take care of the hatched chicks. You will also need to comply with all state and local laws.

Table 1. Incubation time varies among species.

Incubation Table			
Species	Days	Temperature	Humidity
Chickens	21	99.5°F (27.5°C)	55-60%
Ducks	28	99.5°F (27.5°C)	55-60%
Quail	17-18	99.5°F (27.5°C)	55-60%
Geese	30	99.5°F (27.5°C)	60%
Turkey	28	99.5°F (27.5°C)	55-60%

In Maryland, you will need to have a permit to keep and sell live poultry or hatching eggs. You can find more information on the Maryland Department of Agriculture Poultry Information webpage at: <https://mda.maryland.gov/animalHealth/Pages/poultry.aspx#SellLivePoultry>.

Eggs for Hatching Need to be Fertile and Come from Flocks with Rooster Housed with Hens

- ▶ Select only clean, normal-shaped eggs of average size for hatching.
- ▶ Do not wash the eggs.
- ▶ Collect hatching eggs daily and store them with the big end up (Figure 1).

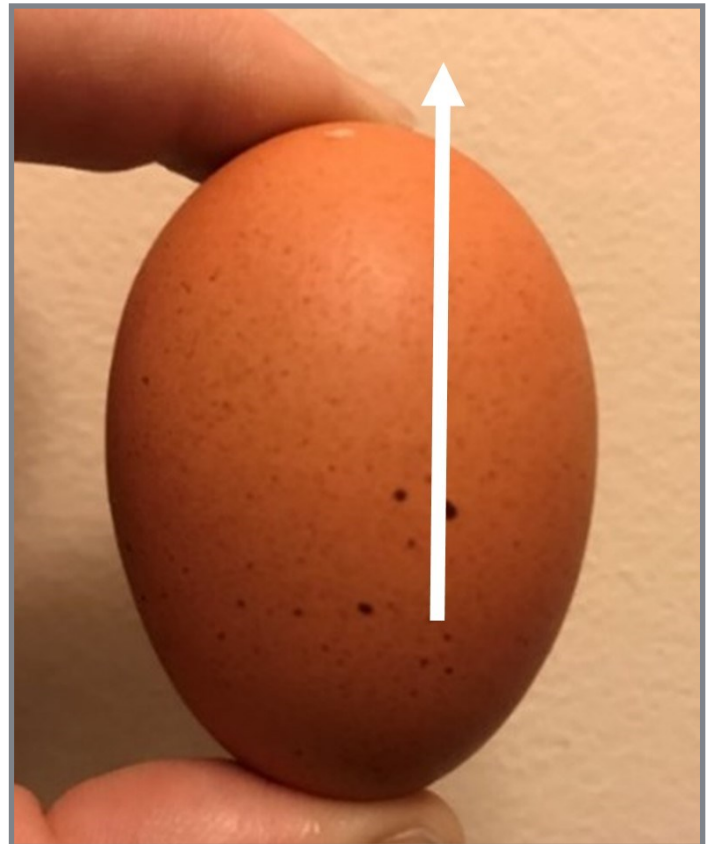


Figure 1. Store eggs with the big end up. Photo credit: Jonathan Moyle

- ▶ Keep them in a cool location (~65-70°) with little variation in temperature and out of direct sunlight.
- ▶ Eggs can be stored for up to seven days, if stored properly, with little loss of fertility. Eggs can also be purchased online from reputable hatcheries as well as from local farmers.

If purchasing eggs, always look for a hatchery certified by the National Poultry Improvement Plan (NPIP) to be sure eggs are Pullorum-Typhoid free. Inspect eggs upon arrival for damage and let them settle for 24 hours prior to placing them in the incubator. More information about NPIP can be found at: <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/NVAP-Reference-Guide/Poultry/National-Poultry-Improvement-Plan>

Eggs purchased at the grocery store are not fertile and will not hatch since the hens don't have access to males and the eggs are often stored at low temperatures.

Look for Broody (Maternal) Hens to Increase Your Flock

If you have a hen that is broody (displays maternal behavior and is inclined to incubate her eggs), allowing her to sit on the eggs is the easiest method to hatch eggs.

To identify which hens are broody and will set on eggs, look for hens that:

- ▶ Are always on the nest and refuse to get off eggs;
- ▶ Fluff their feathers up and peck at you when you try and collect their eggs (Figure 2); and
- ▶ Have a bald patch on their chest which occurs naturally and allows the body heat from the hen to pass to the eggs more easily (Figure 3).

You can place eggs from multiple hens under the same hen. The number of eggs a hen can hatch will depend on her size, with larger hens capable of handling up to 20 eggs. Make sure to provide a safe place for the hens in order to prevent predators from eating them or their eggs. Provide adequate food, water and ventilation.

An Artificial Incubator is Another Way to Hatch Eggs at Home

By using an incubator, hens can continue to lay eggs instead of setting on them, which will prevent a loss in egg production. Incubation also provides replacements for older birds. Additionally, some breeds will not go broody so the only way to replace the birds is through artificial incubation (Figure 4).

Most incubators use electricity to provide the heat needed for incubation (99.5°F). For people who live where access to electricity is limited, there are some incubators that use kerosene lamps or other sources of heat to incubate the eggs.

There are multiple styles of electric incubators that work well for home use. Some are made for just a few eggs while others can incubate several dozen eggs at one time. Most incubators can be programmed to the ideal temperature for the type of egg you are hatching and once set, will hold that temperature throughout the incubation period.



Figure 2. Broody hens will fluff their feathers and peck at you when you try to take their eggs. Photo credit: Jonathan Moyle



Figure 3. Bald patches on hens' chests allow body heat to pass to eggs more easily. Photo credit: Jonathan Moyle



Figure 4. By using an incubator, hens can continue to lay eggs. Photo credit: Jonathan Moyle

It is important that you place incubators out of direct sunlight so they do not heat up too much. Internal rooms with minimal temperature change throughout the day are the best locations for incubators. Start the incubator at least 24 hours before you place the eggs in to allow the incubator to reach the appropriate temperature. This will ensure that it is functioning correctly and allow you to fix any problems prior to placing the eggs. Place a second thermometer at egg level to assure that the incubator is functioning properly. Temperatures that are too hot may result in an early hatch or in dead chicks/embryos, while temperatures that are too cold may cause late hatches and increases in mortality of the embryos.

The humidity in the incubator must be kept at 55-60%. Incubators have built-in reservoirs that must contain water throughout the incubation period. The number of reservoirs you need will depend on the humidity of the incubator's location; dryer areas need more water than those that are humid. Follow the manufacturers' recommendations and check water levels daily.

Turn eggs at least 5-6 times per day in order to prevent the developing embryos from sticking to the egg shell which will result in higher embryo mortality. Hens do this naturally but you must turn incubated eggs by hand or purchase a turner. Mark eggs on opposite sides so that you can tell if the eggs have been turned (Figure 5).

Using an automatic egg turner makes incubation much easier since you don't have to handle the eggs as much. Some incubators come with egg turners built in and

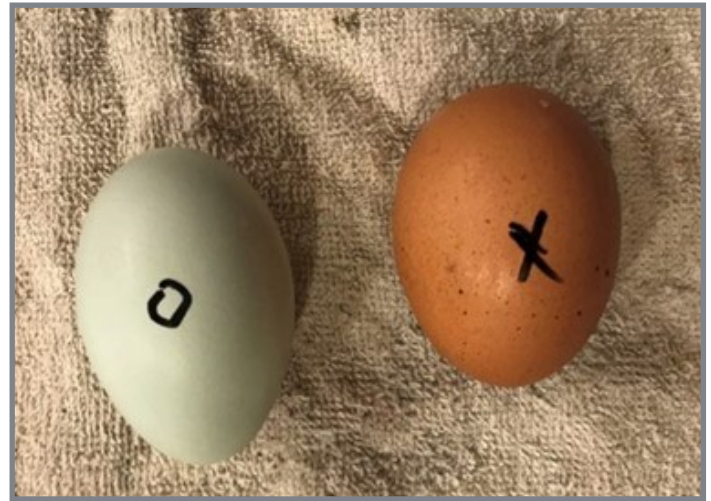


Figure 5. Simple markings on the eggs will help you remember if you have turned them. Photo credit: Jonathan Moyle

others can be purchased separately. Follow the manufacturers' recommendations for proper egg placement in the egg turners. You should stop turning the eggs at day 18 (three days before hatch) so chicks can orient themselves before hatch. Fresh air is important for embryo growth so follow the manufacturer's recommendations on proper ventilation. Ventilation requirements will increase as the embryos develop so they will need more fresh air.

You can "candle" the eggs after 10 days to check for infertile eggs and dead embryos. Discard these eggs since they can adversely affect the hatch and pose a risk



Figure 6. Candle eggs with a pen light (Left). Since there is no embryo, infertile eggs will be bright when candled (Center). Eggs with growing embryos will appear dark when candled (Right) Photo credit: Jonathan Moyle

of exploding. Candle eggs with a bright pen light in a dark room (Figure 6). Infertile eggs will be as bright as a Christmas light, while eggs with growing embryos will make the egg dark (Figure 6).

The first sign of a chick starting to hatch will be a small pip hole. At this time, increase the humidity to 70%. Once this hole is made, the time it takes for the chick to get completely out of the shell can vary greatly.

Some chicks are not strong enough to get out of the shell. If the hatching process takes too long, the chick will usually die. Helping chicks out of the shell also poses risks and may result in the chick dying.

If you decide to help a chick out of the shell, be extremely careful. Sometimes the membranes have dried and pulling on them will tear the chick’s delicate skin. Coming out of the shell too quickly may be too much of a shock for the chick. Break the shell slowly and if the membranes have dried, remoisten them with small amounts of warm water, taking care not to get water on the chick’s face. Often these chicks are too weak, so don’t be discouraged if you cannot save them.

Once the chicks are mostly dried and starting to get on their feet, you can move them to a brooder with heat, starter feed and water. While the chicks are developing, they absorb their yolk which provides nourishment for the first day or two of their lives. Newly hatched chicks do not need to eat immediately after hatching; however, the sooner they begin eating and drinking, the better.

After the chicks have hatched, it is important to clean and disinfect your incubator using an appropriate disinfectant. Make sure to follow the manufacturer’s recommendations for both the disinfectant and the incubator to prevent any damage to your equipment.

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