

4-H CHICKQUEST INCUBATION PROGRAM 2023

- Hatching chicks in your setting using the 4-H CHICKQUEST curriculum can be fun and educational! If you are borrowing an incubator from OSU Extension in Franklin County, then there are some steps in the process:
- The incubators can be reserved in advance but are offered on a first-come, first-served basis.
- The incubators and accompanying materials cost around \$200. For this reason, a \$150 check will be collected at time of loan made out to *OSU Extension, Franklin County*. Your check will be held uncashed until the incubator and materials are returned in good, original and clean condition on the due date, four weeks later. At that time, it will be returned to you.
- You will need to come to our office at a pre-arranged time to pick up and return the incubator.
- You can purchase the eggs yourself which are available year-round from many internet suppliers at a cost of about \$2.50 each. The fertilized eggs must have come from a hatchery with an Ohio National Poultry Improvement Plan (NPIP). If you received your eggs from Meyer Hatchery than you are all right.. Please note that we only support chick incubation and not ducks or quail.



To borrow an incubator contact:
byrd.282@osu.edu
Incubation Questions & Chick Drop-off
hogan.239@osu.edu

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AND ENVIRONMENTAL SCIENCES

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Chick Incubation Guidelines

- It takes 21 days to hatch chicks.
- Set up your incubator two days before eggs arrive. Contact us right away if your incubator does not work.
- **Setting Up the Incubator:** You will need an incubator that has some method of recording the daily temperature and humidity. Ninety-nine to 100 degrees is an acceptable temperature for an incubator that has a forced air system. Humidity levels for the first 18 days of incubation should be between 45-55 degrees. The last three days before hatch you will increase the humidity to 60-65 degrees by adding more water to the incubator. In some cases the incubator manufacturer will identify the water trays as tray 1 and tray 2. Tray 2 will only need to be filled with water the last three days. Some incubators automatically record these numbers for you, while with others you will need to use a thermometer and check the temperature yourself. Check manufacturer instructions.
- Humidity in an incubator often fluctuates. Check the manufacturer's guidelines. Generally, to increase humidity you add more water, and to lower it you let fresh air in. Excessive opening of the incubator will cause temperature and humidity to drop, so avoid doing this.
- The location where you place the incubator does matter. Try to place the incubator in a location where there is not a lot of foot traffic. You do not want a location where people will bump into it. The temperature should be as constant as possible so, in other words, not near a window, air conditioner or heater. You can put newspaper under the incubator (not in) if you are worried about leakage.
- Occasionally an incubator will be unplugged by someone who is not familiar with what is going on. It is important to attach a sign requesting that the incubator not be unplugged as the developing eggs need the constant temperature and humidity levels. Sometimes power has gone out in a building. You might wrap the incubator in a towel or blanket to keep it warm if this happens.
- One to two days before you place your eggs in the incubator have it up and running to make sure the temperature and humidity levels are at peak levels and that the incubator is working properly.
- **Purchasing eggs:** Once you know the date that you will begin incubation, contact the hatchery of choice at least a month in advance to make sure that they have fertilized eggs available to ship. Most fertilized eggs will be delivered by U.S. Mail or another carrier.



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Chick Incubation Guidelines, page 2

- **Putting/setting eggs into the incubator:** When the eggs arrive, let them sit 24-48 hours before you put them into the incubator. This is so that the yolks will come to room temperature. Just like when you wash a cold glass in hot water, the eggs will crack if they are heated too quickly.
- **Handling of eggs:** At all times you should wash your hands before and after handling eggs. This is to protect both the developing chicks inside the eggs as the shells are porous, and also to protect yourself from harmful bacteria. If you are holding the eggs for longer than 24 hours before putting them into the incubator, then place them in a cardboard egg carton with the pointy end down. Place the carton near the incubator and tip one end up a few inches and rotate every 12 hours. This helps to prevent the embryo from sticking to the shell.
- Before placing in the incubator you can number the eggs with a pencil. This helps students to keep track of the eggs. You will want the air cell to be towards the top, so the pointed end of the egg will go first into the egg turner cups.
- **Handling of live chicks:** Students should never touch live chicks. Please refer to the CDC website at the end of this handout. After touching live chicks your hands should always be washed thoroughly.
- **Turning the eggs.** The incubators that you will borrow from OSU Extension have an automatic turner. In nature, the hen would turn the eggs, but they will be turned electronically by the automatic turner. This happens very slowly, so do not expect constant turning. If your turner does not work, contact our office immediately and we will exchange it for a new one. In the meantime, you can turn the eggs yourself every eight hours should it prove to be defective.
- **Days 1-17:** It is extremely important during this time to maintain constant temperature and humidity so that the chicks develop normally inside the eggs. Call our office immediately if the incubator is not working properly.
- **Candling:** As the name implies, in the past farmers would hold up a candle to an egg in a darkened room to get a sense of what was happening inside. Today, there are electric versions. Franklin County 4-H personnel can do this for you in a classroom visit, or you can do it yourself. Some kits do have the candler. There are instructions online. Day 14 to 16 are good days to observe the developing embryos.



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Chick Incubation Guidelines, page 3

- **Candling continued:** In some cases you can tell that a chick never developed as you will not see anything inside. The poster that is included with the teacher guide should help you decide what is happening inside the egg at the various stages. At this point, it is up to you to determine whether you want to dispose of the egg, or not. If so, place it in a sealed plastic bag and dispose of it. You do not want it leaking in the incubator. This is also a time that your numbering system will come in handy. You and your students can record what you see inside after candling. Some things you might want to record are as follows:
 - a. *V* for viable--the egg looks as if it has the possibility to hatch
 - b. *?* if you are not sure--sometimes it is difficult to see into eggs that are different colors
 - c. *X* if there is nothing inside.
- **Days 18-20:** During this time frame you will want to disturb the eggs as little as possible. On day 18 remove the turner and place the eggs side down on the mesh floor of the incubator. At this time also increase the humidity to 65-70 percent by adding additional water in the water trays, in some cases identified as tray 2. Don't crowd the eggs.
- **Brooder box:** On day 17 or 18 you will want to prepare a brooder box. This is basically a cardboard or plastic box with higher sides that will provide a temporary home for the chicks once they hatch. On the bottom place shredded newspaper or other soft bedding materials. Place a clamped grow light onto the box or on a chair near the box. Keep in mind that a warm lamp can melt the sides of a plastic box or other items. Install safely! You will also need a chick feeding system and water jar along with chick food, although chicks can wait up to 24 hours after hatching without food or water. Some potential places in Franklin County to purchase these items include farm supply stores. You can also purchase them online. (Note: some of these items (with the exception of food) are included in the kit. If a chick does not look well after hatching, you can separate it from the others but also provide warmth, food and water.
- **Day 21:** On day 21 you will hear soft peeping coming from the eggs. Sometimes the eggs will rock as the chicks use their "egg tooth" to break through the shell. It may take up to 24 hours for a chick to hatch, as it is an exhausting process. When they come out they will be wet from the humidity and not at all pretty, but they will soon dry and fluff up. Chicks that struggle to hatch do not need your help as you may damage their feathers. On occasion, a chick or two will not look well. Separate it from the other chicks and give it the same care as identified in the *Brooder Box* bullet point. If you are unsure of what to do, call the Franklin County Extension office and we will help you. Also, you will most likely not have all of the eggs hatch despite your best efforts. Do not worry or blame yourself if this happens. As a reminder, do not permit children to handle the chicks.

Chick Incubation Guidelines, page 4

- **Putting the chicks into the brooder box:** After all of the chicks hatch you will want to put them into the brooder box that you have prepared. It is possible that you will need to adjust the grow light from time to time. If the chicks are huddled together they are too cold. If they are far apart they are probably too warm. When they are clustered loosely together they are just right. Chicks grow quickly and can be very messy. You will most likely want to keep them for about five to seven days. Again, please refer to the CDC website regarding chick handling.
- **What to do with live chicks:** If you do not have a home for the chicks your first step is to check with others in your own school or organization before ordering eggs. Many individuals have a connection to a farmer or someone who raises backyard chickens in areas of Franklin County where they are permitted to do so. Please make sure that individuals taking the chicks have the means to take care of them, and that they will be treated ethically. Do not send chicks home with children; an adult should come and get them. You are also required to keep and maintain a form stating the location the chicks were placed in the event Avian Flu is ever detected. Avian Flu is not harmful to humans but can decimate poultry flocks, leading to an increase in egg prices at market. For this reason, if Avian Flu is suspected in Ohio the State Veterinarian might halt all educational incubation programs at any time. This is why it is important to track the location of any incubated chicks.
- **Transporting live birds:** When transporting birds you can place them in a large cardboard box with a lid, such as boxes that formerly contained copier paper. Punch holes in the top of the lid and place shredded newspaper on the bottom. You do not need to add food or water if you have a short commute to their final location. Keep the chicks warm if the weather is chilly by wrapping a towel or blanket around the box. Also, do not leave live birds unattended in a warm or cool vehicle.
- **Cleaning the incubator:** The incubator should be cleaned with a gentle cloth and very mild soap and water. Do not submerge and be careful to unplug and keep electrical parts dry. Air dry.
- **Reordering 4-H ChickQuest Books:** Teacher Guides and Student logbooks can be ordered at: [OSU Extension Publications](#)
- Other important information can be found at: [ChickQuest | Ohio 4-H Youth Development](#)

Resources:

1. Farm Innovators, Inc. *Helpful Hints for a Successful Hatch*, www.farminnovators.com
(instructions included with incubator)
2. Meyer Hatchery Blog, Marie—Rusty Plow Farms, *How to Hatch Eggs Using an Incubator*, <http://blog.meyerhatchery.com>

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