Quiver Farm

"Farm Education That's Fun" Projects, Inc

Hatching Projects Instruction Manual

It is absolutely necessary for you to closely read these instructions. Don't wait until "all else fails!"

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If you have an emergency when our office is closed please email office@quiverfarm.com with the subject emergency.

WHERE TO PUT THE INCUBATOR

HEIGHT: The incubator is 24" square. Provide a sturdy table that is low enough to see in the top (the clear top will be 9" above the tabletop).
POWER: The table needs to be near a working outlet that is *not operated by a light switch on a wall.*
CLIMATE: The room temperature should be between 60 and 70 degrees, normal room temperature. However, *the incubator cannot be in direct sunlight; under an air conditioning vent; over a heat vent; or in front of an open window.*
TRAFFIC: Do not place the incubator in a high-traffic area or a narrow passage-way where it could get bumped.

Setting up the incubator*:*

Plug incubator in and place eggs on top of the wire grates in the holes of the large hole wire grate to keep the eggs from rolling. Place the lid on the incubator and get the temperature set before adding any water. The thermometer goes in the small hole in the top of the incubator where the duck tap is. The temperature should be set at 99.5 degrees at the moment the light goes off.

HOW TO MAINTAIN THE INCUBATOR

TEMPERATURE:

The incubator works like your oven: when the light is on the element is heating, when the light is off the element is not heating. Temperature in the incubator should be kept at 99.5° degrees. When the light goes off at 99.5 the heat will continue to rise then fall to below 99.5 and the light will come back on indicating the heat is on again. This will go on through out the week. The constant temperature range should be within one degree of 99.5. Temperatures between 97-101.5 may effect the results slightly but not detrimentally. Also the water will effect the temperature until the heat warms the water up.

Watch the temperature very closely for and adjust as necessary.

ADJUSTING THE TEMPERATURE**:

You want the light to go off at 99.5. The bent screw on the top of the incubator controls the heat. The thermometer measures the currant temperature.

Watch the temperature closely. (Don't allow it to go over 99.5. if it does turn the screw to decrease until the light goes out plus 1/4 turn per degree it is over. Then lift the lid to let the heat out.) *When the light goes out*, read the thermometer.

If you have to raise the temperature, turn the lever only $\frac{1}{4}$ turn (approx. 1°) at a time to avoid overheating. Wait until the light to goes out before adjusting the temperature again.

If you have to lower the temperature a degree or so, turn the lever a $\frac{1}{4}$ turn for each degree.

Once the temperature has been set for the first time, you probably will never need to touch the thermostat lever again. However, check the temperature before opening to turn the eggs.

There is a wing nut on the adjusting screw that can be tightened to keep the screw from turning. Please just tighten it to snug and do not overtighten.

HUMIDITY

Humidity aids in the proper development of the chick or duck. Eggshells dry out during the incubation period. It can be detrimental if they lose more than 11% of their original weight. To avoid this, we put **water** in the incubator.

As an egg loses moisture, the air cell inside increases—this is normal. Too little humidity and the chick or duck can stick to the side of the membrane. Too much humidity can cause certain deformities. The thickness of the eggshell also affects the absorption rate—but of course, we can't control that!

Your incubator has been designed to provide the right amount of humidity—all you need to do is make sure you fill it properly! There is a trough in the bottom of the incubator; we have identified it with the words "WATER HERE." .

During the day 2 or 3 ounces of water will evaporate. **After the PM turning fill the trough back up to the brim** (avoid overfilling as the water will overflow into the other water trough. Humidity is based on the amount of water surface not the amount of water. **Use room temperature water**: too hot and condensation will form on the lid; too cold and the incubator will take too long to return to 99.5° when you put the lid back on.

On Friday, during your last turning, fill the trough again, put paper towels under the eggs and then leave the incubator undisturbed Saturday and Sunday. DUCKLINGS ONLY: Fill second trough full of water also.

VENTILATION:

Proper ventilation is also important during the incubation process. The chicks and ducks need oxygen! While they are developing, oxygen enters and CO^2 escapes the egg through the shell. There are ventilation holes in the bottom of the incubator which draw fresh air in, pushing stale air out through the holes in the top. This way air is constantly moving. Of course, opening the top to turn the eggs also does this.

WHAT TO DO INSIDE THE INCUBATOR

TURNING THE EGGS:

Turning the eggs prevents the hatchling from sticking to the membrane of the shell. It also distributes the humidity and aids in the exchange of gases. **You will turn the eggs three (3) times a day.** In order to aid you in this task, you will mark your eggs on one side with any marker (X, letter, number, smiles) Spread the turning out, morning, lunch and before you leave. Add the water with the last turning so they will have it filled for the long night.

We have you turn them an odd number of times so that a different side will be up each overnight period. On the last turning on Friday place a layer of paper towels down under the eggs on top of the wire grates. This will help you clean up the incubator after they all hatch as well as provide a mat for their feet. If you are unsure of how to do this you can see the videos on our facebook group: Hatching at Home. **Do not turn the eggs on Saturday and Sunday.**

THE HATCHING PROCESS:

The incubation of a chick is 21 days long. The head of the chick develops at the large end of the egg. Between day 15 and 16, the chick orients itself so that it's beak is near the air cell at the large end. Over the next few days the chick's neck acquires a double bend so that its beak is under its right wing pointing toward the air cell. About day 19, the chick thrusts its head forward breaking through the inner shell membrane and the lungs begin limited functioning. By the end of the 20th day, the chick is breathing completely through its lungs.

For the ducklings they take 28 days to hatch and the development is much the same as chicks but the time frame is different.

On Monday if there is no water left, add a few ounces (do not fill). Do not turn the eggs.

When the hatchlings begin to hatch you may see the eggs rocking slightly. Then you will see the pip hole, soon the baby will work their way around the shell until it is weakened and the baby can push the top off and push their way out of the shell completely. You can watch and time the whole process, charting when they started and when they completed. Also how long before they start walking and dry off for each chick.

Do not help the hatchlings out of the shell unless there has been no activity at all for 3 to 5 hours after the pip hole, then it would be appropriate to peel some shell back and give it a chance.

CARING FOR THE HATCHLINGS

BROODER BOX CONTENTS:

Woodchips, Lamp with 60 watt bulb, water tower, Feed bowl and lid with holes, container of chick food.

Woodchips: Very absorbent of odors and manure.

Chicks: Stir woodchips so bottom chips come to top and manure cycles down.

Ducks: Remove half the woodchips, leaving an inch layer of chips. Through out the week put a layer of clean chips down on top of the wet dirty chips.

WARMTH:

The temperature inside the brooder box should be about 95°. To accomplish this we use the clamp lamp by clamping it on the short end of the brooder box in the upright position. The room temperature and drafts can affect the temperature inside. If all the hatchlings are huddled together in one corner of the brooder box, they are cold. We will need to get them warmer because they will die. You can lean the lamp by maneuvering the lamp to lean over closer to the hatchlings in the brooder box. You may have to put the brooder box lid over the other half to increase the heat. This will usually happen at night when the temperature drops. If the chicks are all spread apart and panting, they are hot— remove the lid and/or raise up the heat lamp.

FEEDING:
The water tower will need to be filled up and the lid screwed on. Turn it over and place it on the opposite side of the lamp and lifts it out of the woodchips a little. on a level surface. A bowl placed under it gives it a steady flat surface to sit on With ducks you can place it on a paper place to catch the water they drip.
Fill the feed bowl and place the lid on it (yes it comes apart) to keep the chicks from wasting it.
Take each dry and fluffy hatchling from the incubator and dip its beak into the water first and then the food. If they have hatched late and are not dry yet, keep them in the incubator until they are completely dry. Since they have just absorbed the yolk sac, they can go up to 48 hours without food or water, even overnight! It is better for them to be DRY rather than in the brooder box with the food and other hatchlings. Also, when refilling the waterer, avoid getting the wood chips wet. Remember: A wet chick is a cold chick is a dead chick!.

IMPORTANT INFORMATION

HATCHABILITY:

You should expect half of the eggs to hatch. However, since we pre-incubate the eggs and then candle them, we know there is a live hatchling inside. So we usually get more.

However, many things can go wrong at any stage of the process so **we consider the hatch a success if only one hatches**. **For delivery programs only**: *If none of the eggs hatch, we will redo the project for you.* **We guarantee at least one chick will hatch**. We do not guarantee the pick up projects but will rehatch at 50% discount, when we have the equipment available.

If an egg has not hatched by Wednesday afternoon, before you leave, you can discard the egg in the trash.

After all hatchlings are out of incubator and you have discarded any unhatched eggs, **the bottom of the incubator and the wire racks must be scrubbed with soap and warm water (no bleach). Do not wash the top.** After they have dried, place the racks back in the bottom and leave the top lid slightly ajar. Do not turn the lid upside down. Place all electrical cords inside the incubator. **This washing step is considered part of our contract with you and you must return a clean incubator.**

NATURAL OCCURENCES:

It is always possible for a hatchling to die after hatching. Place it in a plastic bag and discard it in the trash. If a hatchling is so weak it cannot move, or is deformed, there is no treatment, the hatchling will die. Put it in a plastic bag and place it in the freezer where it quickly expire in the most humane fashion possible.

If a hatchling seems weak, treat it by frequently dipping its beak in some sugar water (1 tsp/ounce) and it should perk up. It is a good idea to separate the hatchling from the others in the brooder box so it does not get trampled or pecked. This can be done by cordoning off a corner of the brooder box with cardboard and tape. Place some food and water in jar lids or something of comparable depth like a cut-down Dixie cup (anything deeper and they could drown). Position the lamp so they all get heat. Of course you could use a separate box altogether but you'll need another 60-W lamp for heat.

Sometimes a hatchling will have a dislocated hip or bad leg. As long as it gets food and water, it should be alright. If the leg is so bad the hatchling cannot walk, then separate it as already described. The only other deformity you may encounter is a sac protruding from the hatchling's bottom. This is an incomplete absorption of the yolk sac. If the hatchling were to be put in the brooder box, the other hatchlings will peck at it. This hatchling will not survive anyway, so it is best to put it down as already described. **Please email with any questions you have.**

CHICK PICK UP:

A farmer will pick up the hatchling and equipment on Friday between 8:30 AM and 5:30 PM (Thursday in New York). **Please refer to page 8 in this manual for more detailed pick up and returning instructions.**

THE MIRACLE OF CHICK GROWTH

BEFORE EGG LAYING
- Fertilization
- Division & growth of living cells
- Segregation of cells into groups

BETWEEN LAYING & INCUBATION
- No growth; inactive embryonic life

INCUBATION

FIRST DAY
- 16 hours: resembles a chick embryo
- 18 hours: appearance of digestive tract
- 20 hours: appearance of backbone
- 21 hours: nervous system begins to form
- 22 hours: head begins to form
- 23 hours: blood vessels forming
- 24 hours: eye begins to form

SECOND DAY
- 25 hours: heart begins to form
- 35 hours: ear begins to form
- 42 hours: heart begins to beat

THIRD DAY
- 60 hours: nose begins to form
- 62 hours: legs begin to form
- 64 hours: wings begin to form

FOURTH DAY: tongue begins to form

FIFTH DAY: reproductive organs begin form; sex is determined

SIXTH DAY: beak and egg tooth begin to form

EIGHTH DAY: feathers begin to form

TENTH DAY: beak begins to harden

THIRTEENTH DAY: scales and claws appear

FOURTEENTH DAY: chick turns its head toward the blunt end of the egg

SIXTEENTH DAY: scales, claws and beak harden

SEVENTEENTH DAY: beak turns toward air cell

NINETEENTH DAY: yolk sac enters the body

TWENTIETH DAY: chick is fully formed and occupies all the space inside the egg except the air cell

TWENTY-FIRST DAY: with his egg tooth, the chick first makes a pip hole, then slowly rotates in a circle pecking and peeping. Then he pushes with his feet and shoulders until he's free!

RECOMMENDED READING
TO ENHANCE YOUR QUIVER FARM CHICK HATCHING PROJECT

BOOK	AUTHOR
Chicken Little	Various
Henny Penny	Various
The Little Red Hen Book	Paul Galdone
This Little Chick	John Lawrence
Where Do Chicks Come From? (Let's-Read-and-Find-Out Science, Stage 1)	Amy E. Sklansky
Be Patient Little Chick	Claude Clement
The Rooster Who Lost His Crow	Wendy Cheyette Lewison
Chick (See How They Grow)	DK Publishing
A Nest Full Of Eggs (Let's-Read-and-Find-Out Science, Stage 1)	Priscilla Belz Jenkins
The Golden Egg Book (Big Little Golden Book)	Margaret Wise Brown
The Chick And The Duckling (Aladdin Books)	Merra Ginnsburg
Chickens Aren't The Only Ones (World Of Nature Series)	Ruth Heller
Scholastic Interactive Pocket Charts: Eggs/Life Cycles	Scholastic
The Chick That Wouldn't Hatch	Claire Daniel
From Egg to Chicken (How Living Things Grow)	Anita Ganeri
The Chicken or the Egg? (Rookie Read About Science)	Allan Fowler
Chickie Riddles (Easy-to-Read, Puffin)	Katy Hall

FOR MORE LEARNING MATERIALS
TO ENHANCE YOUR QUIVER FARM CHICK HATCHING PROJECT

Go to www.quiverfarm.com. Click on **Downloads**
Username = quiver Password = farm

ACTIVITIES TO TRY

FOR PRESCHOOL & SCHOOL-AGE

1. Keep a daily diary of your observations of the eggs, and then the chicks. Do the eggs move? Where do the chicks start to peck? In what direction do they peck after the first pip hole? When can you hear them? How long does it take for them to come out? When do they start to eat? When can you see feathers growing? Where do they start growing?
2. Break open an egg from the refrigerator on a paper plate (*Fresh from a farmer is always better!*). Identify the parts of the egg. Sometimes you can see the chalaza, sometimes not. Look for the germinal disc—if the egg is fertile it will appear as a flat spot possible with a white thread.
3. When you are turning the eggs on Thursday and Friday (day 17 & 18), hold the egg up to your ear. Can you hear the chick inside?
4. In a warm bowl of water place the egg gently, for a short time, in the water. It will bob up and down then jerk to the side, showing the movement of the chick inside the egg.
5. When the chicks are in the brooder box, move the light closer to the chicks for a few minutes. Where do the chicks go? Turn the light off for a few minutes. Where do the chicks go? (The light is just right when the chicks are wandering around the box, not huddled together or lying down panting)
6. Write a story about what you believe the chicks are thinking while in the egg. (Their brain is fully functional at about 52 hours into the incubation).
7. Using building blocks, or children sitting foot to foot, create a circle and place the chicks in the middle. Be sure to put newspapers down! This is good when they are 2 to 3 days old.
8. Look at the chicks closely after they hatch. Do any have the remainder of the egg tooth on their beak? Look at the empty egg shell. How did the chick fit in there?
9. Watch a video on how to sex a chick. See if you can tell.

FOR ADULTS AND SENIORS

1. PLAY THE NAME GAME. Have each resident choose a name for a chick. Place all names in a "hat." As each chick hatches, pull a name out of the hat for that chick. Good luck remembering just who is who!
2. DELEGATE MOTHER HEN RESPONSIBILITIES. Have a different resident add the water each morning and turn the eggs. Get as many people involved turning the eggs the other two times each day. Create a button or badge for them to wear. Be sure they know how to CLUCK appropriately!
3. FIND THE FARMERS. Interview your residents to find out who grew up on a farm that had chickens. Make a ROOSTER badge or button for the men who raised chickens. Make an EGG button or badge for anyone who had the job of collecting the eggs each day. Get them to share their experiences: Did they raise broilers? Layers? Fancy chicks? Did they ever take their chickens to poultry shows? Did they have bantams or standard-sized chickens? Did they ever have a mean rooster in the hen house?
4. Try any of the activities to the right!

Your Hatching Pick-up Checklist

Quiver Farm Projects - 267-607-7522

Your project(s) will be picked up on the FRIDAY AFTER THE HATCH. THURSDAY IN NEW YORK AND THURSDAY FOR GOOD FRIDAY WEEK

We pick up between 8:30 am and 5:30 pm. and cannot guarantee nor schedule a pick-up time. Thank you for working with us on this matter.

The Equipment

Please have the following equipment together and ready to go. Leave the light on with food and water in the brooder box until we arrive. Have everyone say their "goodbyes" BEFORE we arrive:

1. The INCUBATOR - top and bottom with two grates and water tray inside.
2. The THERMOMETER *Place inside the incubator.*
3. The BROODER BOX - Hatchlings, bottom, lid, feeder, water tower, lamp, left-over food

If you are returning the Hatching Project Check List

- ◊ Clean Incubator
- ◊ Thermometer
- ◊ Plastic Tray
- ◊ (2) Wire Grates
- ◊ Brooder Box
- ◊ Feeder
- ◊ Water Tower
- ◊ Feed Containers

When transporting the hatchlings nothing is to be in the brooder box with them. Empty the water tower and the feed dish and wash with warm soapy water. Disconnect the lamp, clamping the cord in the clamp. Place the lid on loosely and the transport in a warm vehicle. Put cord of incubator inside incubator to keep it safe. All other equipment you can put in a bag for transport.
The project needs to be returned on Friday by 3 pm. If you need to return earlier please contact us to make arrangements. When all the equipment is accounted for then you will get your deposit returned.

IT IS REQUIRED...

All equipment is to be returned cleaned. Then use soap and water only—no bleach.
Do not wash the top of the incubator! Store the incubator with the lid ajar in a safe place: Avoid the floor as it may stepped on; avoid heat vents as the Styrofoam may melt . Do not turn the lid upside-down.

** We value your feedback and read all evaluations. Please tell us what we are doing right and what we need to improve on.

Thank you for the opportunity to share this miracle of life with you!

EGG TURNING SCHEDULE

If your eggs were delivered in the morning, turn **two** more times today. If your eggs were delivered in the afternoon, turn **one** more time today.

	AM Turn	Mid-Day Turn	PM Turn	Water
Monday	_____	_____	_____	_____
Tuesday	_____	_____	_____	_____
Wednesday	_____	_____	_____	_____
Thursday	_____	_____	_____	_____
Friday	_____	_____	_____	_____

Add 2 to 3 ounces of water PM Turn just to keep the trough full (the trough is marked with the words "water here"). **Be very sure not to get water in the center trough marked "No-No."** This will create too much humidity and you will get wet-bottomed hatchlings

FRIDAY BEFORE YOU GO HOME:

1. Fill the trough one last time. DUCKS: Fill troughs #1 & 2
2. Put a layer of PAPER TOWELS UNDER the eggs and on top of the grates.
3. Turn the eggs for the last time.

DO NOT turn the eggs or add water on Saturday and Sunday. Leave the incubator undisturbed!

MONDAY MORNING:

1. Check the water trough.
2. If there is NO water, add just enough to cover the bottom of the trough (2 to 3 ounces).
3. WATCH YOUR CHICKS HATCH!!

If there are any eggs left by Wednesday afternoon before you leave, they are probably not going to hatch. Throw them out in the trash. Throw out all eggshells and paper towels, then wash the incubator bottom and grates with soap and water (no bleach or disinfectant). **Do not wash** the top of the incubator or the thermometer. Set the top ajar and place all equipment in a safe place to dry. **Do not let an incubator sit plugged in with dirty eggshells in it!** This will ruin the incubator and is a source of infection. Your cooperation helps us to keep the price of this project so reasonable. **Thank you!**

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Our eggs have

hat ch ed

Date:_____

Time:_____

Place:_____