

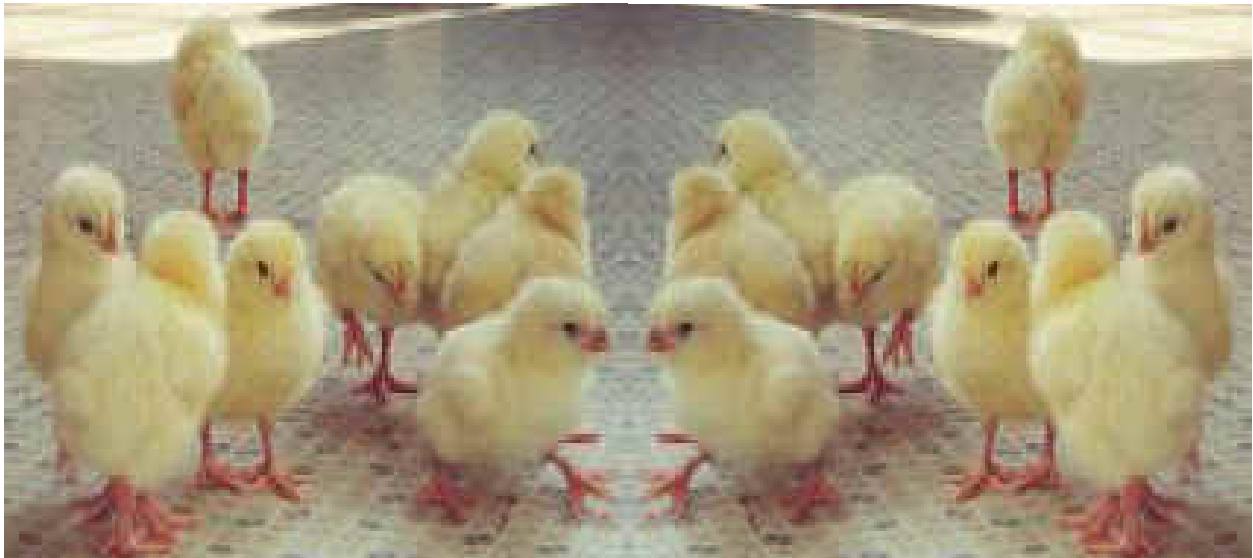
# Quiver Farm

*"Farm Education That's Fun"*

Projects, Inc

## **Chick Hatching Project** **Instruction Manual**

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



**Quiver Farm Projects, Inc.**

**3096 Wild Run Road**

**Pennsburg, PA 18073**

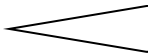
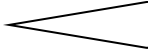

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**If you have an emergency when our office is closed please call 610-845-1170 for help.  
Weekdays 7:00 PM to 11:00 PM and Sat./Sun. 7:00 AM to 11:00 PM**

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## 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 passageway where it could get bumped.

## TYPE OF INCUBATOR



*Incubator with automatic thermostat.*

We use two types of incubators. One has squared corners and utilizes a thermostat with a manual adjusting lever. The other has rounded corners and utilizes an automatic electronic thermostat. *You cannot request one or another.*



*Incubator with manual thermostat.*

## HOW TO MAINTAIN THE INCUBATOR

### TEMPERATURE:

Temperature in this still-air incubator should ideally be kept at 99.5° degrees. However it could, for a short time, drop to 97° or rise to 101° and not be detrimental (although it will affect the hatch). Overheating will kill the chicks. Underheating will delay the hatch. The constant temperature range should be within one degree of 99.5.

When your farmer first sets the eggs, the incubator temperature will not be up to 99.5°. **Your job will be to watch the temperature very closely for the first several hours, and adjust as necessary\***. A thermometer is supplied.

*\* This applies to the manual thermostat incubator only.*

### ADJUSTING THE TEMPERATURE\*\*:

The thermostat is made up of a thin, round, golden 'wafer' inside the incubator lid; an adjusting lever outside the incubator lid; and a light. A label indicates which direction to turn the lever: *clockwise to lower, counterclockwise to raise*. A  $\frac{1}{4}$  turn will approximately raise or lower the temperature by 1°. The thermostat works like your oven: when the light is on the element is heating, when the light is off the element is not heating.

**After the farmer leaves, watch the thermostat closely.** *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. Allow the light to go out before raising another degree.

**If you have to lower the temperature,** turn the lever a  $\frac{1}{4}$  turn for each degree then lift the lid slightly to allow the excess heat to escape.

Once the temperature has been set for the first time, you probably will never need to touch the thermostat lever again. However, do monitor it 2 to 3 times daily. We recommend you place a cup over the lever to discourage inquiring fingers!

**\*\* This applies to the manual thermostat incubator only.**

## HUMIDITY

Humidity aids in the proper development of the chick. 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 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." Your farmer will fill this the first day.

During the day 2 or 3 ounces of water will evaporate. **Each morning fill the trough back up to the brim** (avoid overfilling as the water will leak out the ventilation holes—there is nothing wrong with this—other than a mess to be cleaned!). **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 afternoon before you leave, fill the trough again and then leave the incubator undisturbed Saturday and Sunday.**

## VENTILATION:

Proper ventilation is also important during the incubation process. The chickies need oxygen! While the chick is developing, oxygen enters and CO<sup>2</sup> 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 chick 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, your farmer has marked the eggs with either an 'X' or a number on one side: on one turn you see the number, the next you don't!

Turn the eggs first thing in the morning when you fill the water trough. The next turn should be around lunchtime, and the final turn before you leave for the day in the afternoon. **Do not turn the eggs on Saturday and Sunday.** We have you turn them an odd number of times so that a different side will be up each overnight period. Before you go home on Friday, shuffle the eggs around while you place a layer of paper towels down on top of both grates. Replace the eggs back on top of the paper towels in the fashion your Farmer set them up. This will help you clean up the incubator after they all hatch as well as provide a mat for their little feet.

### 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 its 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.

**Check the incubator when you come in on Monday (the 21st day). If there is no water left, add a few ounces (do not fill). Do not turn the eggs!**

Watch the eggs, during the first stage you may see the eggs rocking back and forth as the chick pecks at the inside of the shell. You may even see a pip hole already in the shell. It takes several hours for the chick to peck out. Using its egg tooth (a tiny sharp projection on the end of its beak) the chick pecks thousands of times. Finally the chick pips through the shell and begins to breathe the outside air. After the bird has made a pip hole it stops pecking for several hours as it gathers strength and its lungs adjust to the room air.

In the second stage, the chick begins to slowly turn around counterclockwise inside the shell. As it turns, the cutting edge of the egg tooth chips away at the shell. In two to five hours the chick has made it three-quarters of the way around. As it moves, the chick pushes with its feet and shoulders, trying to push the cap off. Squirming and struggling, the chick finally pushes the egg apart and tumbles out—still wet, panting and exhausted!

It will lay very still, extremely tired! After a few minutes it will try out its cramped muscles and begins to get up on its feet - it takes many tries, many falls, tumbling over and over. Finally, it masters walking, the incubator heat has dried it out and you have a cute fluffy peep! This process takes about two hours after the chick hatches.

**Do not help the chick out of the shell unless there has been no activity at all for 12 to 15 hours after the pip hole—then it would be appropriate to peel some shell back and give it a chance.**

## **CARING FOR THE CHICKS**

### SET-UP:

Set up the brooder box as shown by your Farmer during the presentation. The box contains pine shavings for bedding, a feeder, a bag of chick feed, a waterer and a light with a 60W incandescent bulb. Clip the light to one end of the box and lower it as far as possible. **The light must stay on 24/7** so do not plug into an outlet operated by a wall switch. Fill the waterer and place it on the **opposite** side of the light. The chicks are drawn to the heat of the light, so this will keep them from stepping or falling into the water - a cold or wet chick will soon be a dead chick! Fill the feeder and place it under the light; this will encourage eating!

### FEEDING:

Take each dry and fluffy chick from the incubator and dip its beak into the water first and then the feeder. If the chicks have hatched late and are not dry yet—keep them in the incubator until they are completely dry “behind the ears.”. Since they have just absorbed the yolk sac, they can go up to 48 hours without food or water. It is better for the chicks to be DRY rather than in the brooder box with the food and other chicks. Also, when refilling the waterer, avoid getting the wood chips wet. Remember: A wet chick is a cold chick.

### WARMTH:

The temperature inside the brooder box should be about 95°. The room temperature and drafts can affect the temperature inside. If all the chicks are huddled together in one corner of the brooder box, they are cold—make sure the light is directly above them and cover the other end of the box with the lid. If the chicks

are all spread apart and panting, they are hot—raise up the heat lamp.

#### CLEANING:

Stir the wood chips daily, your nose will be thankful! (In addition to stirring, an option is to withhold half of the wood chips and add some fresh ones in each day)

## **IMPORTANT INFORMATION**

#### HATCHABILITY:

You should expect half of the eggs to hatch. However, since we pre-incubate the eggs and then candle them before we deliver them to you, we know there is a live chick 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 chick hatches. If none of them hatch, we will redo the project for you. We guarantee at least one chick will hatch.**

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

After all chicks 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. If you do not clean the incubator, it will permanently smell foul (and you may get that one next year).**

#### NATURAL OCCURENCES:

It is always possible for a chick to die after hatching. Place it in a plastic bag and discard it in the trash. If a chick is so weak it cannot move, or is deformed, and there is no treatment, the chick 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 chick 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 chick 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 chick 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 chick cannot walk, then

separate it as already described. The only other deformity you may encounter is a sac protruding from the chick's bottom. This is an incomplete absorption of the yolk sac. If the chick were to be put in the brooder box, the other chicks will peck at it. This chick will not survive anyway, so it is best to put it down as already described. **Please call or email with any questions you have.**

#### CHICK PICK UP:

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



**IMPORTANT**

#### HOW TO TELL THE SEX OF A CHICK:

During the first 24 hours, spread the chick's wing and look at the tips of the pin feathers barely showing. Chicks with feathers even and the same length are cockerels (males); those with varied, uneven lengths are pullets (females). **It is hard to tell. After many years we are right only 50% of the time!** Professional 'chick sexers' guarantee 98% accuracy, however they do thousands a day!

**ABOVE ALL—RELAX AND ENJOY YOUR PEEPS!**

### **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**

Chicken Little

Henny Penny

The Little Red Hen Book

This Little Chick

Where Do Chicks Come From?

(Let's-Read-and-Find-Out Science, Stage 1)

Be Patient Little Chick

The Rooster Who Lost His Crow

Chick (See How They Grow)

A Nest Full Of Eggs (Let's-Read-and-Find-Out Science, Stage 1)

The Golden Egg Book (Big Little Golden Book)

The Chick And The Duckling (Aladdin Books)

Chickens Aren't The Only Ones (World Of Nature Series)

Scholastic Interactive Pocket Charts: Eggs/Life Cycles

The Chick That Wouldn't Hatch

From Egg to Chicken (How Living Things Grow)

The Chicken or the Egg? (Rookie Read About Science)

Chickie Riddles (Easy-to-Read, Puffin)

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## **FOR FUN HANDOUTS**

### TO ENHANCE YOUR QUIVER FARM CHICK HATCHING PROJECT

**Go to [www.quiverfarm.com](http://www.quiverfarm.com). Click on Downloads in the upper right corner.**

Username = quiver Password = farm

#### **CHOOSE FROM**

- Chick Hatching Handouts—Children
- Chick Hatching Handouts—Senior (COMING SOON)
- Chick Hatching Handouts—Science (COMING SOON)
- Chick Hatching Project Instruction Manual
- Client Project Evaluation

## ACTIVITIES TO TRY

### FOR PRESCHOOL & SCHOOL-AGE CHILDREN

1. 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 possibly with a white thread.
2. 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?
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. 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)
5. 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).
6. 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.
7. 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?
8. Take pictures. Create a web page for families to follow. Do the chicken dance. Read stories. Sing songs. Photocopy the coloring pages and color. Make your own chick books. Make cotton ball chicks.

### 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. **ACT LIKE A KID** and try any of the activities to the right!

## Your Chick Hatching Pick-up Checklist

Quiver Farm Projects - 610-845-7522 - quiverfarm@quiverfarm.com

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

There can be NO EXCEPTIONS to this. If you will not be at your facility, or it will be closed on this day, have the equipment ready and make arrangements for someone to be there to let us in and direct us to the equipment and chicks. If necessary, give us a phone number and we will call this person from the road to let them know what time to meet us at your facility.

Another option is for someone to take everything home with them and we will pick up there - WE MUST KNOW THIS IMMEDIATELY, so call us the day after we drop off. SPECIAL NOTE: If you choose this option, you are responsible for returning everything. AND...the chicks must be kept warm and safe, so keep your dogs and cats out of the room!

We pick up between 8:30 am and 5:30 pm. What takes us 3 days to deliver, we pick up in ONE day! Multiple farmers drive around and pick up anywhere up to 75 projects. We line them up geographically 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 inside.
2. The THERMOMETER or TWO ELECTRICAL CORDS - thermometer for manual thermostat, two cords for automatic thermostat (*Place either inside the incubator*)
3. The BROODER BOX - bottom, lid, feeder, waterer, lamp, leftover food in bag or can provided
4. This INSTRUCTION MANUAL with MASTER COLORING PAGES
5. Completed EVALUATION FORM\*\*

### Please help us by....

Washing the bottom of the incubator with soap and water on the Wednesday following the hatch. Dump the existing water in the trough and clear out all paper towels and eggshells first. Then use soap and water only—no bleach.

Do not wash the top! Store the incubator with the lid ajar in a safe place: Avoid the floor as it may be 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.

	<b>Water</b>	<b>AM Turn</b>	<b>Mid-Day Turn</b>	<b>PM Turn</b>
Monday	_____	_____	_____	_____
Tuesday	_____	_____	_____	_____
Wednesday	_____	_____	_____	_____
Thursday	_____	_____	_____	_____
Friday	_____	_____	_____	_____

Add 2 to 3 ounces of water each morning 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 chicks.

PLEASE  
NOTE

### **FRIDAY BEFORE YOU GO HOME:**

1. Fill the trough again.
2. Put a layer of PAPER TOWELS between 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!**

**Quiver Farm Projects, Inc.**

610-845-7522

quiverfarm@quiverfarm.com

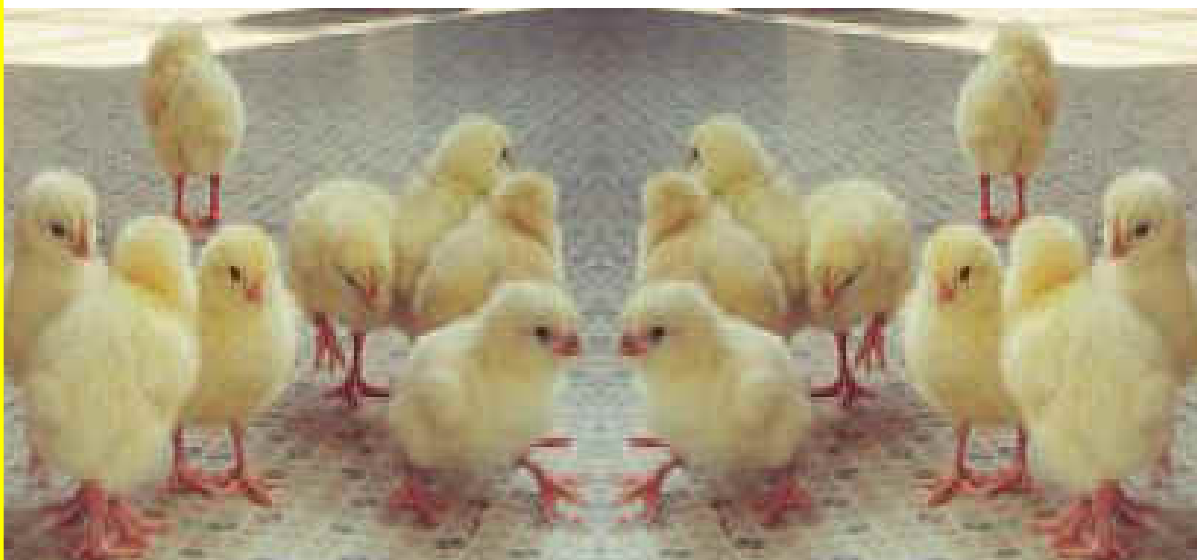
# *Birth Announcement*



**DATE:** \_\_\_\_\_

**TIME:** \_\_\_\_\_

**PLACE:** \_\_\_\_\_



# *Our chicks have hatched!*

**Quiver Farm  
Chick Hatching Project EVALUATION  
(Please return upon pick-up or FAX to 610-845-0075)**

Facility Name \_\_\_\_\_

Your Name (not required) \_\_\_\_\_

Did you ENJOY the project? \_\_\_\_\_

How many chicks hatched? \_\_\_\_\_ Date: \_\_\_\_\_

Any challenges keeping the incubator at 99.5°? (If so, explain) \_\_\_\_\_

\_\_\_\_\_

Any other “pre-hatch” challenges? \_\_\_\_\_

\_\_\_\_\_

The INSTRUCTIONS GIVEN are integral to the success of this project. After listening to the presentation, the Chief-Egg Tender’s instructions, and then reading the instruction/activity booklet, were you confident completing the project?

YES NO (please circle)

Your Comments \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Any “post-hatch” challenges? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Who was your FARMER, the presenter? \_\_\_\_\_

Please comment on the FARMER \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Any other comments? \_\_\_\_\_

\_\_\_\_\_

How did you hear about us? \_\_\_\_\_

**Thank you very much!**

Quiver Farm Projects, Inc. • 3096 Wild Run Road, Pennsburg, PA 18073 • 610-845-7522  
www.quiverfarm.com