

D. Incubation and Reproduction

1. Are there any special instructions for incubating duck and goose eggs?

Duck eggs in large, force-draft incubators, should be incubated at $99\frac{1}{4}$ - $99\frac{1}{2}$ °F and goose eggs at 99 - $99\frac{1}{2}$ °F. The wet bulb reading during the incubation period should be 86 - 88° and 92°F at hatching time. These high humidity requirements eliminate the possibility of satisfactory results if waterfowl eggs are set in a large incubator with chicken eggs.

To increase humidity the eggs should be sprinkled with lukewarm water twice weekly up to the 25th day, then discontinued until the eggs start to pip. The addition of too much water during incubation will increase the number of eggs, which rot in the incubator.

In small still-air incubators the temperature should be $100\frac{1}{4}$, $101\frac{1}{2}$, $102\frac{1}{2}$ and 103°F, respectively, for the 1st, 2nd, 3rd and 4th weeks of incubation.

The eggs should be turned at least three times a day. Goose eggs should be turned through an angle of 180 degrees.

2. How can you check relative humidity in an incubator?

The wet-bulb temperature is based on the rate of evaporation of moisture from a wet surface. To determine this, take a thermometer that registers between 80 and 100° F and cover the bulb with a piece of cloth. Dip the bulb in water and place it in the incubator level with the eggs. Watch the temperature until it stabilizes and take the reading. This is the wet-bulb temperature. The lower the wet-bulb reading the lower the percent relative humidity and vice versa. Ref. E. Incubation – "Incubating Chickens", for recommended levels of humidity for incubating eggs.

3. Where can I get plans and parts for the construction and operation of a small incubator?

Ref. A. General Information – "Information About Supplies of Stocks and Equipment for Small Flocks" for equipment; Incubation Series - Unit 2 "Construction of a Small Incubator" for plans; Unit 3 "Incubating Chicken Eggs" for instructions on how to operate a small incubator.

4. How can you sex day-old chicks?

The most common method of sexing day-old chicks is by the Japanese or vent sexing method. This method involves visual examination of the rudimentary copulatory organ on the top wall of the vent. Structural differences exist between the male and female. Accuracy with this method requires much training and good eyesight. A second method is visual observation of the immature gonads by the use of an optical device, which is inserted into the intestine of the chick. The female has one and the male two gonads.

A third method is autosexing, which uses visual differences in the appearance of the day-old chicks to different sex. Examples are feather color and rate of feathering. The latter method is limited to phenotypic (visual) traits, which are carried on the sex chromosome. Another option is feather sexing, but not all breeds can be separated by sex or by observing the length of the primary and secondary feathers of a day-old chick.

5. Can an unfertilized egg show development?

Parthenogenesis, the development of unfertilized eggs, occasionally occurs in turkeys. Most of the embryos die prior to hatching. Those that hatch are sterile.

6. How long can hatching eggs be stored before they are incubated?

A rule of thumb is for each day eggs are held over 4 days, hatchability will drop 3-4% and hatching time will be delayed 30 minutes. Hatchability of eggs stored for long periods (over 7 days) can be improved by storing the eggs at 65°F in air tight plastic bags and turning the eggs once a day. Turning consists of placing one end of the case on a 2-3 inch board or brick one day, and the other end the next.

7. How long does it take chicks to hatch after they start to pip?

Although there is individual variation, approximately 80% of the chicks will hatch within 15 hours after the first chick hatches (slightly less for waterfowl). A hatch should be completed within 24 hours. Hold eggs that have not hatched by this time to your ear. You can assume the egg will not hatch if you do not hear movement. Or better yet, candle them to determine the progress.

Smaller eggs in a lot hatch faster than the larger eggs. White Leghorn eggs hatch sooner than eggs from heavy breeds. The longer eggs are held prior to incubation, the slower they hatch.

8. Should I help late hatching chicks out of the shells?

No, because chicks that hatch late are usually weak and/or deformed.

9. Does placing eggs on their side in the incubator reduce hatchability?

No, this is the normal position under a setting hen. Don't set eggs large end down.

10. What should I do to the incubator if the power goes off for several hours?

Keep the eggs as warm as possible. Don't seal the incubator to conserve heat; the embryos need oxygen.

11. Should I open the incubator to check on the progress of the hatch?

No, opening the incubator lowers the temperature and humidity which delays hatching and may lower hatchability. Be patient, wait until most of the chicks are hatched and dried off before opening the incubator.

12. What effect does the freezing of combs of males have on fertility?

Frozen combs on males will gradually shrivel up and turn black in color. The result is subnormal fertility and hatchability for a period of 2 weeks. Rarely will the combs of dubbed males freeze. Ref. G. Management Practices – "Dubbing"