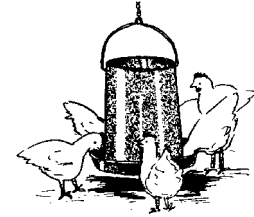




JULY 2003



BACKYARD FLOCK TIP . . .

CANDLING EGGS TO DETERMINE FERTILITY AND INCUBATION PROBLEMS

It is a good idea to candle incubating eggs to determine fertility and to evaluate incubation performance. There are several reasons why candling can be of value:

- C First, it is necessary to know if the eggs that are being incubated are fertile. If they are not, it is a waste of time, effort, and expense to incubate them.
- C Second, fertility determination will allow the flock manager to assess the breeding stock. Causes of infertility in breeding stock can be numerous but often include disease, poor nutrition, poor light management, percent birds too young or old, or having leg or foot problems to name a few.
- C Third, candling eggs allows the flock manager to cull bad eggs and increase the space in the incubator for each of the viable embryos remaining after candling.
- C Fourth, candling and removing infertile eggs, early dead embryos (mortality during the first week of incubation), and contaminated eggs will improve sanitation during incubation. It is a good procedure to count the early dead embryos and calculate percentages of early deads as the percentage of all eggs set. High percentages of early dead embryos are the result of poor egg handling and storage procedures, poor egg or incubator sanitation, incorrect turning frequency or turning angle (turn a minimum of 3 times per day a full 90⁰ angle each turn; turning is not necessary the last 7 days before hatch), and incorrect incubation temperature, humidity, or poor ventilation resulting from insufficient fresh air.

PUTTING KNOWLEDGE TO WORK

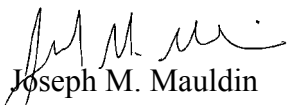
Candling Procedure

Candlers can be bought, or preferably, constructed with a cheap flashlight. To make a candler, simply attach a cardboard or plastic cone to the light end of the flashlight. The tip of the cone should be about the diameter of a nickel. Light from this small aperture will pass through the eggshell allowing the observer to evaluate fertility and incubation performance. Candling may be successfully done as early as 3 to 4 days of incubation. However, it is sometimes difficult to see the developing embryo at this stage, especially when the egg shells are brown. The optimum time for candling is around 8-10 days of incubation when the embryos and their extra-embryonic membranes are large and easy to see. At this time, an infertile egg or an egg containing a very early dead embryo will let light pass completely throughout the egg interior. The shadow of the yolk can be easily seen. Developing embryos and their membranes constitute a large, dark mass (about 2/3's the contents of the egg). By examining a fertile egg at this time, one should be able to detect a reddish tinge from the numerous blood vessels in the membranes.

When all of the eggs being candled have been incubated the same number of days, there will only be a small variation of embryo size. When an embryo has died early (2-6 days), candling at 8-10 days will allow it to be detected because its mass will be considerably smaller than the developing live embryo. Another useful sign to look for when determining if the egg has a viable or dead embryo is to look at the color of any visible blood vessels. As mentioned earlier, live embryos will have a reddish hue in the extra-embryonic membranes while in dead embryos these vessels will be very dark, almost black. When the embryo dies the red color of the blood turns to an almost black appearance.

Egg Breakout

Now that the eggs have been candled and the clear eggs and those thought to contain early embryo mortality have been removed from the incubator, it is time to perform an egg breakout. The reason to break the eggs out is to accurately determine fertility and embryo mortality. It is inaccurate to estimate fertility without examining the contents of eggs removed from the incubator. When candling, very early mortality, in many cases, will look like infertiles and to call them infertile would underestimate fertility and underestimate mortality. Infertile eggs appear about the same as eggs that have not been incubated. To determine fertility, look for the blastodisc on the yolk. The blastodisc is where embryo development begins and will have 2 different appearances depending on whether or not it is fertile. The fertile blastodisc will have a doughnut-like appearance with the outer ring of the doughnut a white color. Inside the ring there will be a clear area. The infertile blastodisc looks very different. The ring shape will be discontinuous and will not resemble a ring. The white mass will be smaller than the fertile blastodisc ring, and will not have a white ring. The area in the infertile blastodisc is clear and the inner part will consist of a bright, white dot.


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