



The University of Georgia

Cooperative Extension Service

College of Agricultural and Environmental Sciences / Athens, Georgia 30602-4356

MAY 2005



HATCHERY/BREEDER TIP . . .

CHICK QUALITY: AN UPDATE

Chick quality is still a term than many breeder, hatchery and broiler people still have a hard time defining. Most everyone can identify poor quality chicks from good quality chicks. However, when three people are asked to define chick quality, three different descriptions would be received. Currently chick quality is mainly based on observations such as whether or not the chick is alert, dry or wet, whether the navel is completed sealed, and deformities. While these are a good start, there are chicks than can be dry, have completely sealed navels, no deformities but still do not perform well. Researchers will continue to search for an objective measurement (one that will not vary from person to person) but in the mean time the best measurement is to use a combination of observations. Most people working to evaluate chick quality agree that first week mortality may be the best measure available. However, the information if after the fact and growers and broiler flock supervisors need the information as soon as possible to make management decisions need to optimize that flock's performance.

There are several factors that can affect chick quality. These are listed in Table 1. Since there is no objective way to measure chick quality at this time, it is important to define how chick quality is determined. One group in Belgium has been evaluated chick quality from three different broiler breeder lines. In order to report and compare chick quality they have come up with a system that has been successful in their observations. It should be noted that there is still a possibility that the information will differ from person to person, but this appears to be a good start. Table 2 describes the parameters they used for determining chick quality and Table 3 demonstrates the scoring system. The score level for each parameter was determined based on the importance to chick survival and the severity of any anomaly it may carry.

Table 1. Factors that can affect chick quality

Hatching egg quality	Size, shape, color, shell integrity and contamination
Time of collection	Can affect embryo developmental stage
Egg storage	Temperature and humidity
Incubation temperature	Temperature variations or hot/cool temps should be avoided
Incubator carbon dioxide concentration	While some is needed for proper development, high concentrations can result in poor quality chicks
Hatch time spread	Chick hatching time in relation to being removed from the incubator can impact chick performance

Table 2. Parameters used to assess chick quality

PUTTING KNOWLEDGE TO WORK

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Parameter	Description
Activity	Chick was placed on its back and observed to see how quickly it returned to its feet. An immediate return to its feet was considered strong, while delay return or remaining on its back was considered weak.
Down and appearance	Chick should dry and clean (free from adhering dried yolk, shell and membranes)
Retracted yolk	Chick was placed on its back on the hand palm. The height of its abdomen was estimated. The consistency of the abdomen to touch was then estimated. Chicks that had bodies with large yolks and hard to the touch was considered poor quality.
Eyes	Open, alert and bright were considered good quality. Open but not bright considered fair and closed were poor quality.
Legs	Chick was put on its feet and whether it could stand easily was observed. Toe conformation was assessed as was hock color.
Navel	Navel closure and coloration of the skin around the navel was observed. Skin color different from the chick skin color was considered poor quality.
Remaining membrane	Remaining membrane was categorized as very large, large or small.
Remaining yolk	Remaining yolk adhered to the skin and down was categorized as very large, large or small.

Table 3. Scoring system used in chick quality determination

Parameter	Characteristics	Scores
Activity	Good	6
	Weak	0
Down and appearance	Clean and dry	10
	Wet	8
	Dirty and wet	0
Retracted yolk	Normal	12
	Large yolk hard to the touch	0
Eyes	Open and bright	16
	Open, not bright	8
	Closed	0
Legs	Normal legs and toes	16
	One infected leg	8
	Two infected legs	0
Navel	Completely closed and clean	12
	Not closed and not discolored	6
	Not closed and discolored	0
Remaining membrane	No membrane	12
	Small membrane	8
	Large membrane	4
	Very large membrane	0
Remaining yolk	No yolk	16
	Small yolk	12
	Large yolk	8
	Very large yolk	0

While this system was useful to this project, some alterations could be made to fit a companies needs. The important thing to remember is consistency when evaluating each parameter. Other methods for determining chick quality have been developed and tried and are quite similar to the one described above. The common feature is that each method used multiple parameters to assess chick quality.

References:

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Tona, K., O. Onagbesan, Y. Jago, B. Kamers, E. Decuypere, and V. Bruggeman 2004. Comparison of embryo physiological parameters during incubation, chick quality, and growth performance of three lines of broiler breeders

differing in genetic composition and growth rate. Poultry Sci 83:507-513.

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****Consult with your poultry company representative before making management changes****
“Your local County Extension Agent is a source of more information on this subject.”