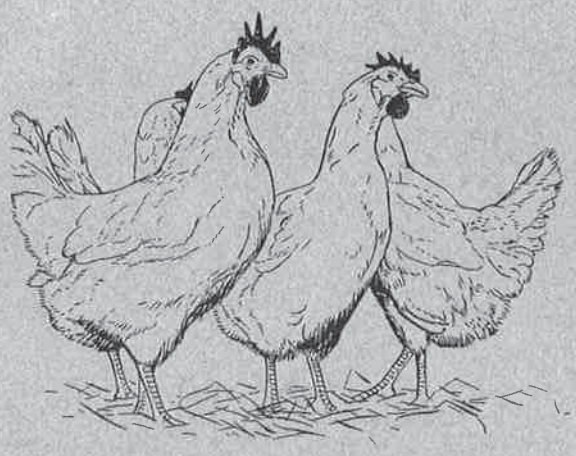
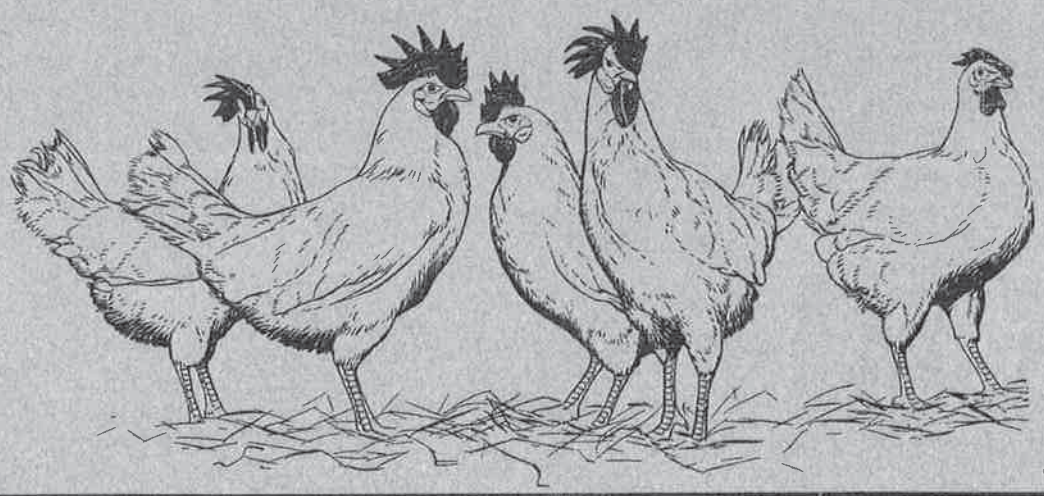


Poultry Judging



EGG QUALITY

Interior Quality

Candling is used to judge interior egg quality. Although other factors help determine the grade of an egg, the interior quality is most important. Each egg is graded on its individual merits of quality according to United States Department of Agriculture (USDA) grades. The grades are AA, A, B, and Inedible. Knowledge of the parts of the egg is essential to understanding candling and grading (Figure 1).

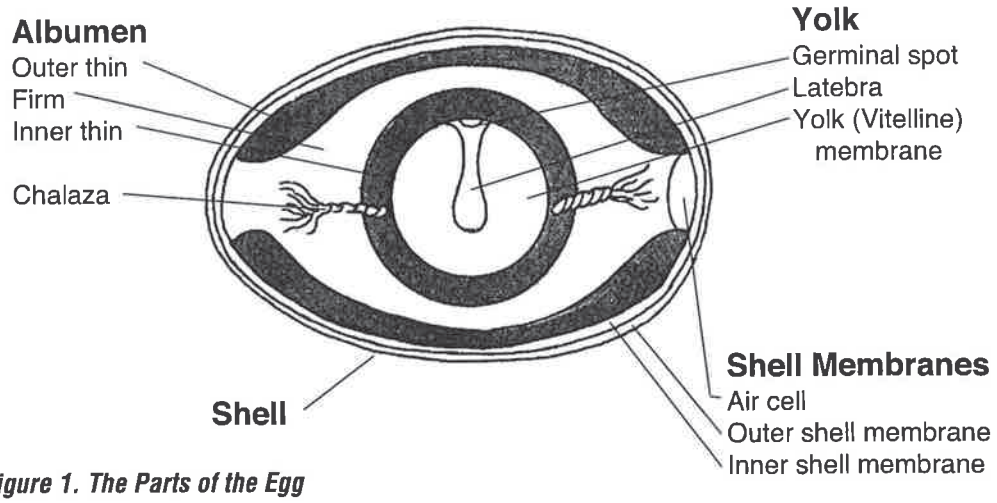


Figure 1. The Parts of the Egg

How to Candle

Hold the egg up to the candling light in a slanting position. You can see the air cell, the yolk, and the white. The air cell is nearly always in the large end of the egg. Therefore, put the large end next to the candling light.

Hold the egg between your thumb and first two fingers. Then by turning your wrist quickly, you can cause the inside of the egg to whirl. This will tell you a great deal about the yolk and white. When you are learning to candle, you will find it helpful to break out and observe any egg contents you are in doubt about.

Application of Standards

Use the specifications given in Table 1 to determine the grade of an egg by candling. Consider air cell depth, yolk outline, and albumen quality.

Table 1. Summary of Standards for Interior Quality of Eggs by Candling for 4-H Poultry Judging

Quality Factor	AA Quality	A Quality	B Quality	Inedible
Air Cell	1/8" or less in depth	3/16" or less in depth	More than 3/16" in depth	Does not apply
White	Clear Firm	Clear May be reasonably firm	Clear May be weak and watery	Does not apply
Yolk	Outline slightly defined	Outline may be fairly well-defined	Outline clearly visible	Does not apply
Spots (Blood or meat)	None	None	Blood or meat spots aggregating not more than 1/8" in diameter	Blood or meat spots aggregating more than 1/8" in diameter

Air Cell Depth

The depth of the air cell is the distance from its top to its bottom when the egg is held with the air cell up (Figure 2). In a fresh egg, the air cell is small, not more than an eighth of an inch deep. As the egg ages, evaporation takes place and the air cell becomes larger and the egg is downgraded.

Measuring Air Cell Depth

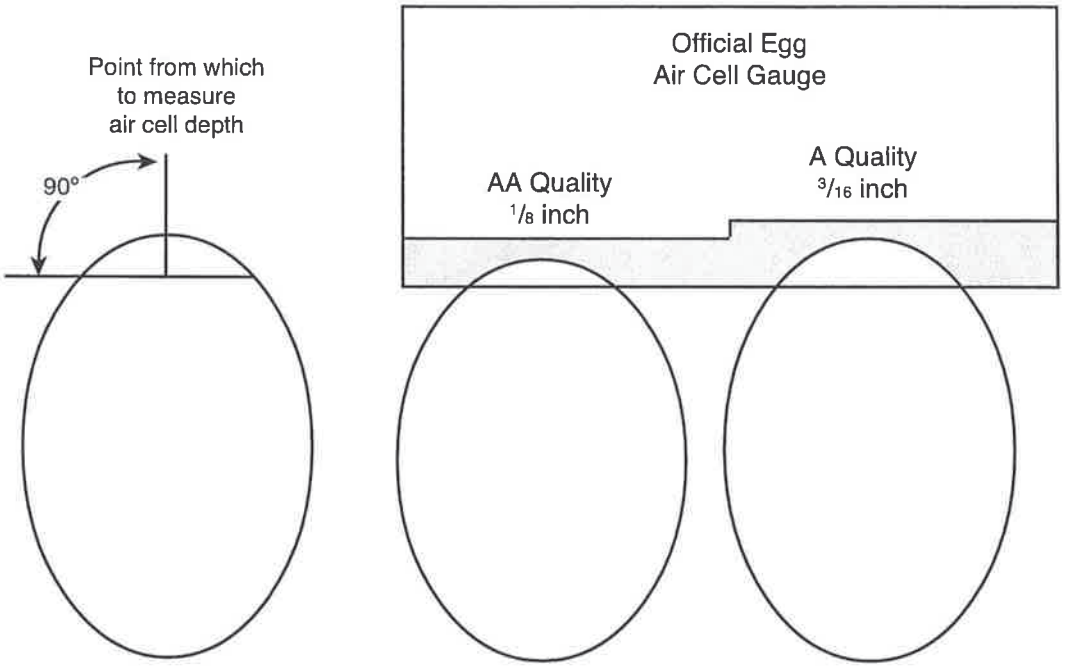


Figure 2. Gauge for Measuring Depth of Air Cell

Yolk

The yolk of a fresh, high-quality egg will be surrounded by a rather dense layer of albumen or white. Therefore, it moves only slightly away from the center of the egg when it is twirled before the candler. Because of this, yolk outline is only slightly defined or partially visible. As the egg ages or deteriorates in quality, the albumen thins and the yolk tends to move more freely and more closely approaches the shell. The yolk then becomes more visible when candled.

White or Albumen

The character and condition of the white or albumen is determined largely by the behavior of the yolk of the egg when the egg is candled. If the yolk retains its position in the center when the egg is twirled, the white is usually firm and thick.

Eggs with blood or meat spots more than 1/8 inch in diameter should be classified as Inedible. However, very small pinpoint spots should not be used in judging contests. Contestants should not confuse blood spots with the chalazae. This string of albumen helps hold the yolk in the center of the egg and may be prominent in some eggs. The chalazae are distinguished from a blood spot by a bright area of refracted light that accompanies the darker shadow of chalazae.

The following will not be considered as quality factors when candling eggs for interior quality.

- Loose, bubbly, or out-of-position air cell
- Exterior stains or dirt
- Faulty egg shell shape or texture

Exterior Quality

In commercial egg processing plants, eggs are graded simultaneously for exterior and interior quality. However, in judging contests, it is necessary to grade eggs for exterior quality separately, because handling of eggs by contestants can change the grade. Exterior quality standards reduce the number of eggs with defects that detract from the appearance of the egg or that would have a low probability of surviving the rigors of handling in normal market channels. In other words, we want the consumer to have clean, unbroken eggs with practically normal shape and texture. Contestants should not bo too harsh in assigning grade to eggs that may have minor defects. This is especially important when judges have gained experience in evaluating eggs with various degrees of abnormalities.

Exterior Quality Grades

Table 2 summarizes the descriptive terminology used in the *USDA Egg Grading Manual* to help determine the grade of an egg by exterior quality. For 4-H Poultry Judging Contests, eggs will be assigned the grades of A, B, and Dirty. Grades AA and A have identical standards. The factors that affect exterior quality are discussed below.

Stains

Grade A eggs must be clean. These eggs can show traces of processing oil (used to preserve freshness). This processing oil may give a shiny or opaque appearance. Eggs with slight stains or moderate stains covering less than $^1/_{32}$ of the shell—if the stain occurs in one localized area—or $^1/_{16}$ of the shell surface—if the stains are scattered—are assigned Grade B.

Dirty eggs have prominent stains, or moderate stains covering more than $^1/_{32}$ of the shell if localized, and $^1/_{16}$ of the shell if scattered. Eggs with adhering dirt or foreign material are also classified as Dirty.

Contestants will be evaluating only the exposed surface of the egg. The underside of the egg should be considered free from defects. Evaluate only what you see.

Table 2. Summary of Standards for Exterior Quality of Eggs

Factor	**Grade**		
	AA or A	B	Dirty
Stain	Clean. May show small specks, stains, or cage marks that do not detract from general clean appearance of the egg. May show traces of processing oil.	Slight stains, moderate localized stains less than $^1/_{32}$ of shell, or scattered stains less than $^1/_{16}$ of shell.	Prominent stains. Moderate stains covering more than $^1/_{32}$ if localized and $^1/_{16}$ of the shell if scattered.
Adhering Dirt or Foreign Material	NONE	NONE	Adhering dirt or foreign material (1.0 mm in area or greater).
Egg Shape	Approximately the usual shape.	Unusually or decidedly misshapen (very long or distorted).	
Shell Texture	May have rough areas and small calcium deposits that do not materially affect shape or strength.	Extremely rough areas that may be faulty in soundness or strength. May have large calcium deposits.	
Ridges	Slight ridges that do not materially affect shape or strength.	May have pronounced ridges.	
Shell Thickness	Free from thin spots.	May show pronounced thin spots.	

Adhering Dirt or Foreign Material

Grade A and B eggs cannot have any adhering dirt or foreign material. Eggs with adhering material (three-dimensional) larger than a speck (about 1.0 millimeter) should be classified as Dirty. Small specks of dust or lint that may have settled out of the air should not be considered.

Egg Shape

There is a considerable range of egg shapes that could be considered "approximately the usual shape" or Grade A. Eggs that are perfectly spherical (round) or too long to fit in the egg carton should be graded B quality. B quality grade for egg shape will include eggs that are clearly misshapen or that have definite flat areas.

Shell Texture

Eggs with faulty texture are much weaker in shell strength and may be broken during distribution. Shells with large calcium deposits (greater than an eighth of an inch in diameter) should be classified as Grade B. Eggs with small calcium deposits are classified as Grade A. There is no standard for the number of calcium deposits, which means that small calcium deposits over the entire shell may be classified as Grade A if otherwise qualified. A good rule of thumb is that if you were to pull your fingernail across a calcium deposit, and there would be a good size hole if it came off, the egg would be classified as Grade B.

Ridges

Ridges can result in weakened shells. Many eggs show small ridges and most of these should be classified as Grade A. Those eggs with large ridges are Grade B.

Shell Thickness

The shell should appear thick enough to withstand reasonable handling without breaking. Grade A eggs must have thick shells with no thin spots. Thin shells or thin spots would place an egg in Grade B. In all cases the shell must not be broken.

Broken-Out Quality

Eggs broken out for this class will be Grades AA, A, B, and Inedible. Eggs with spots (blood and meat) more than an eighth of an inch in diameter will be classified as Inedible. Eggs with spots less than an eighth of an inch in diameter will be classified as Grade B.

The only other criteria that should be used to grade broken-out eggs is the height of the thick albumen relative to the size of the egg. The size, flatness, or position of the yolk should not be considered. Broken-out grade determination must be based on "U.S. Standards for Quality of Shell Eggs" from the USDA. The thick albumen retains the shape of the egg in a Grade AA and is thick, whereas there is a flattening and rounding of edges in a Grade A egg. The thick white in a Grade B egg is flat and barely visible.

READY-TO-COOK POULTRY

Carcasses are graded A, B, or C quality. Factors used in judging ready-to-cook carcasses in a 4-H Poultry Judging Contest are:

- exposed flesh,
- broken and disjointed bones, and
- missing parts.

Always mark your scorecard for the lowest grade defect found on the carcass.

Because of the length of most judging contests, carcasses will dry out. You should not place carcasses based on off-color areas such as bruised, dried out, or brown areas. In addition, feathers and pinfeathers are not used as a quality factor in ready-to-cook carcass judging.

Carcasses used for contests will usually have Grade A fleshing, conformation, and fat cover. You should, however, be prepared to recognize poor fleshing and finish if such birds are available for a contest.

The carcasses you judge will be hanging from shackles. This method is used so it is easier to see all parts of the bird. CARCASSES CANNOT BE TOUCHED OR HANDLED DURING JUDGING. It is permissible to turn the shackle to see the whole bird as long as you do not touch the carcass. If the ready-to-cook carcasses are on plates, judge them as you see them.

Ready-to-cook poultry will be judged according to the quality specifications in Table 3. There are four weight categories for determining the size of cuts or tears on the different parts. There are no weight ranges for missing parts and disjointed and broken bones. Learn a method of judging carcasses by looking at one part at a time.

Cuts, Tears, and Trims

Cuts, tears, and trims result from a miscut with a knife or tearing of the skin during a processing operation. When ready-to-cook poultry is downgraded for cuts, tears, and trims it is based on the weight of the carcass and the part. The length of a cut or the amount of flesh showing on the part determines the grade.

REMEMBER: Cuts, tears, or trims must be completely through the skin so that the meat, called flesh, can be seen, in order to put the carcass in a lower grade.

The grade is determined by the amount of exposed flesh as length of cut or amount of skin missing (Table 3). Sometimes there may be more than one cut, tear, or trim on a particular part; add the length, or amount missing, to determine the grade based on that part only. Each part is graded separately and the grade is determined by the part having the lowest grade on that carcass. Exposed flesh from the continuation of an evisceration cut at the front and back of the breast should not be considered in determining carcass grade.

The Grade A carcass is not permitted to have any cuts, tears, or missing skin. The Grade B carcass can have up to a third of the flesh showing as long as meat yield is not materially affected. The Grade C carcass has more than a third of the flesh showing.

A good rule of thumb is that the trim is a slight trim if it does not exceed the thickness of a five-cent piece (nickel) or an eighth of an inch. An excessive trim that would move the grade lower would have the appearance of a cupped effect that looks deeper than an eighth of an inch.

Refer to Table 3 for the section on cuts and tears for the lengths and amount of exposed flesh that is allowed. Remember: A slight cut into the meat not more than the thickness of a nickel (an eighth of an inch)—so that the appearance of the part does not look bad—is permitted in Grade B. If the trim into the meat is more than the width of a nickel (an eighth of an inch) or the trim appreciably alters the appearance of the meat, then it is a Grade C.

Missing Parts

Missing parts to be considered in judging are the wings, tail, and part of the back area if it is no wider than the base of the tail. It is important to remember that the weight of the carcass does not count in judging for missing parts.

The Grade A carcass may have the wing tips and tail missing where the tail joins the back. The Grade B carcass may be missing the wing up to the second joint, as well as the tail and back less than halfway to the hips. In a Grade C ready-to-cook carcass the wing may be cut off at the third joint at the juncture of the body. In addition, the tail and back, more than halfway to the hip, may be missing. For missing parts, use the lowest grade that you see for wings, tail, and back.

Disjointed and Broken Bones

A disjointed bone is where the joint is out of the socket. In other words, the part that is disjointed is still whole and not broken. You will be able to see the end, or knobby part of the joint underneath the skin.

Broken bones occur between the ends of the bone. They can be broken so that the bone either does not come through the skin or the bone penetrates the skin. When the broken bone does not come through the skin it is called nonprotruding. When the bone penetrates the skin, it is called protruding. As shown in Table 3, a Grade A ready-to-cook carcass can have one disjointed, but no broken bones. A Grade B carcass can have either two disjointed or one disjointed and one nonprotruding broken bone. More than two disjointed and/or one or more broken, protruding bones, make the carcass Grade C.

Table 3. Summary of Poultry Judging Contest Specifications of Quality for Individual Carcasses of Ready-to-Cook Poultry

Factor		A Quality		B Quality		C Quality
Exposed Flesh[1]						
Carcass Weight		Breast[2] & Legs	Elsewhere	Breast & Legs	Elsewhere	
Minimum	Maximum					
None	2 lbs	None	3/4"	1/3 of flesh exposed on each part of carcass provided meat yield not appreciably affected		No Limit
Over 2 lbs	6 lbs	None	1 1/2"			
Over 6 lbs	16 lbs	None	2"			
Over 16 lbs	None	None	3"			
Disjointed bones		One disjointed		Two disjointed and no broken or one disjointed and one nonprotruding broken		No Limit
Broken bones		None				No Limit
Missing parts		Wing tips and/or tail removed at the base		Wing(s) to second joint Back area not wider than base of tail and extending halfway between base of tail and hip joints.		Entire wing(s) Back area not wider than base of tail extending to area between hip joints

[1]Longest length for a cut and total area for tears and missing skin based on the whole part.
[2]For purposes of definition, the parts of the carcass shall be each wing, leg, entire breast, and entire back.

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