



4AJ-06P0

Kentucky 4-H Poultry: Grading Ready-to-Cook Poultry

Jacquie Jacob and Tony Pescatore, Department of Animal and Food Sciences

In a 4-H poultry judging event, participants are required to grade a selection of ready-to-cook (RTC) carcasses. In the Kentucky state event, the participants are required to grade eight broiler, eight roaster-fowl, and eight turkey carcasses. In the national event, the participants grade 10 carcasses from each of the three weight groups, plus a second group of 10 broiler carcasses.

Individual carcasses are hung from shackles. They can be hung from the front or back (see Figure 1). They also can be hung by one leg or two (see Figure 2). Participants are allowed to handle the shackles, but cannot touch the carcasses in any way.

Figure 1. Comparison of RTC broiler carcass hung from either the front (A) or the back (B)

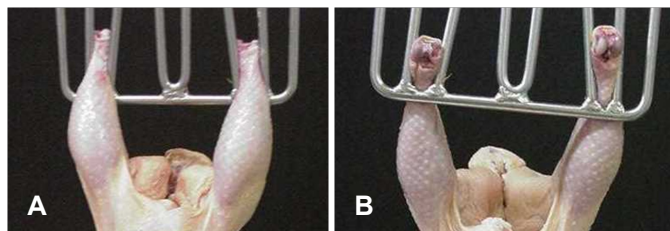
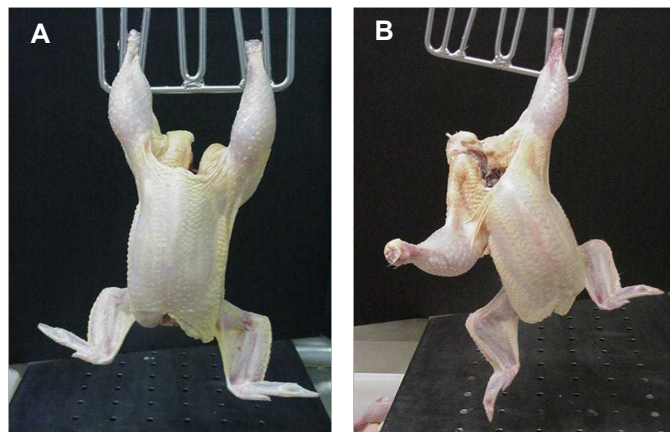


Figure 2. Comparison of RTC carcass suspended from a shackle by two (A) or one (B) leg



Carcasses are graded as A, B, or C based on USDA standards (see Table 1 on the next page). Determination of grade is based on the amount of exposed meat (called flesh), the number of broken or disjointed bones, and missing parts.

To determine the grade of an RTC carcass, determine the grade for each of the six parts (each wing and leg, entire breast, and entire back; Figure 3). The grade for the carcass will be the lowest grade observed in the individual parts. For each leg, which is the drumstick and thigh together, it is important to consider all sides, including the inner cavity area. The point at which the breast ends and the back starts is along the side of the carcass and identifiable by the change in the feather follicle pattern.

Exposed Flesh

During processing, carcasses often sustain cuts, tears, and trims as a result of a miscut with a knife or tearing of the skin during the automated processing operation. In order to downgrade a carcass, the cuts, tears, or trims must be completely through the skin so the flesh can be seen.

Figure 3. Identification of the parts of a RTC carcass

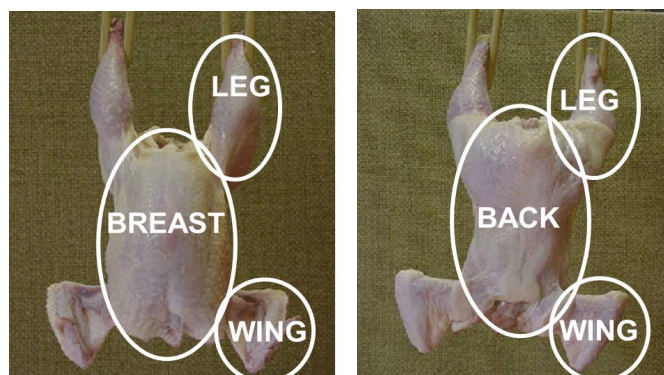


Table 1. Summary of specifications of quality for individual carcasses of ready-to-cook poultry.

Factor	A Quality		B Quality	C Quality
Exposed flesh, based on carcass weight ¹	Minimum	Maximum	Breast and Legs²	Elsewhere²
None	2 lbs	1/4"	1"	• All parts
Over 2 lbs	6 lbs	1/4"	1 1/2"	• One-third of flesh exposed on each part of carcass, provided meat yield not appreciably affected
Over 6 lbs	16 lbs	1/2"	2"	
Over 16 lbs		1/2"	3"	
Disjointed bones	• 1 disjointed		• 2 disjointed	• No limit
Broken bones	• None		OR	• No limit
			• 1 non-protruding broken and 1 disjointed	• Any protruding broken bones
			OR	
			• 1 non-protruding broken and 1 disjointed	
Missing parts	• Wing tips and/or		• Wing(s) to the second joint.	• Entire wing(s)
	• tail removed at the base		• Back area not wider than base of tail and extending less than halfway between base of tail and hip joints	• Back area not wider than base of tail extending to area beyond halfway to hip joint

¹ Longest length of 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 and leg, entire breast and entire back (Figure 3).

As indicated in Table 1, the amount of exposed flesh allowed on a carcass for a particular grade is based on the weight of the carcass as well as the part affected. For example, a Grade A roaster fowl or turkey carcass is allowed more exposed flesh on the breast and thigh (a half-inch) than that allowed on a smaller broiler carcass (a quarter-inch).

Sometimes a carcass or part may have more than one cut, tear, or trim, as is the case in Figure 4. When there is more than one area of exposed flesh on a particular part, add the total amount of exposed flesh to determine the grade for that part. In the example in Figure 4, assuming there is no exposed flesh on the sides of the carcass and no meat is missing, the total of exposed flesh would be less than one-third of the breast, making that part a Grade B.

A Grade A broiler carcass breast is permitted to have cuts and tears totaling less than one-quarter inch only if there is no missing skin. A Grade B carcass can have up to one-third of the flesh of the breast

visible as long as meat yield is not materially affected. Any carcass with more than one-third of exposed flesh on a part is a Grade C carcass. There is no limit to the amount of exposed flesh allowed on a Grade C carcass; the carcass could be totally skinned and the lowest grade it can have is a C.

For a trim to materially affect meat yield, the amount of meat missing must be more than one-eighth of an inch thick, which is approximately equivalent to the thickness of a nickel. A trim removing more than one-eighth of an inch of meat would downgrade the carcass one grade than it would have if there was no effect on meat yield. Cuts into the meat without any meat removed are not considered.

It is important to examine the carcass carefully since the cuts on the breast and legs, which only are allowed one-quarter to one-half inch of exposed flesh depending on the carcass size, may be quite small (as shown in Figure 5).

Figure 4. Chicken carcass with multiple areas of exposed flesh on the breast



Figure 5. A small cut in the skin of the breast of a ready-to-cook carcass



Processing cuts near the vent and/or breast opening less than 1 inch beyond the opening are acceptable and should not be considered in grading the carcass (Figures 6-8).

Figure 6 shows processing cuts in the vent area affecting the amount of flesh exposed on the breast. In the left carcass (1), the processing cut is small and would not affect the grade. In the middle carcass (2), the processing cut is slightly larger but less than 1 inch, so it, too, would not adversely affect the grade of the carcass. In the right carcass (3), however, the processing cut is more than 1 inch, downgrading the carcass. Based on the portion of the carcass that is visible, carcasses 1 and 2 would both be Grade A and carcass 3 would be Grade B.

Figure 7 also shows processing cuts in the vent area, but the amount of exposed flesh on the thigh is affected rather than the breast. In this type of processing cut, it is important the cut be continuous with the body cavity. A cut that occurs in the same area but does not start in the body cavity is not considered a processing cut. On the left carcass, the processing cut is less than 1 inch and would not adversely affect the grade. On the right carcass, however, the processing cut is greater than 1 inch, which would downgrade the carcass to a Grade B.

Figure 8 shows processing cuts in the neck area, with the amount of exposed flesh on the breast affected. No processing cut is on the left carcass. Carcasses 2

Figure 6. Chicken carcasses showing various lengths of processing/evisceration cuts at the vent and affecting the breast



Figure 7. Chicken carcasses showing various lengths of processing/evisceration cuts at the vent and affecting the thigh

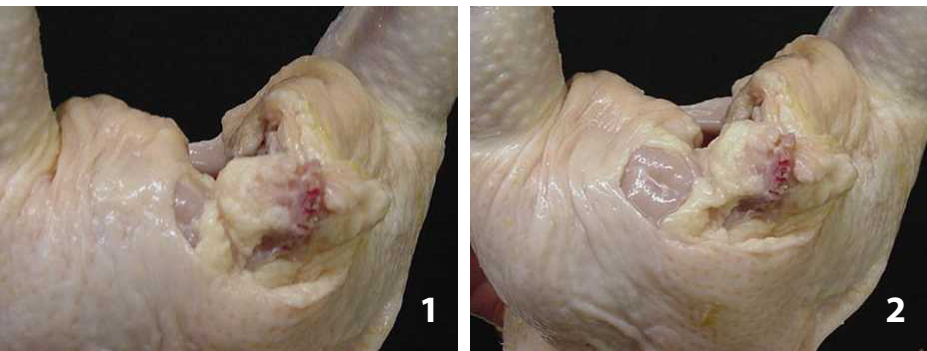


Figure 8. Photographs of ready-to-cook chicken carcasses showing various lengths of processing/evisceration cuts at the neck area and affecting the breast



and 3 have processing cuts, but the cut on the middle carcass is less than 1 inch and does not affect the grade of the carcass. On the right carcass, however, the processing cut is longer than 1 inch, downgrading the carcass to a Grade B.

Disjointed and Broken Bones

A disjointed bone occurs when an intact bone (not broken) is out of the socket. Typically, you can see the end of the bone that should be in the joint. Broken bones occur between the two joints and can be protruding or non-protruding. A protruding broken bone is a broken bone where a portion of the bone breaks the skin and is protruding through. A non-protruding broken bone, as the name implies, does not break the skin.

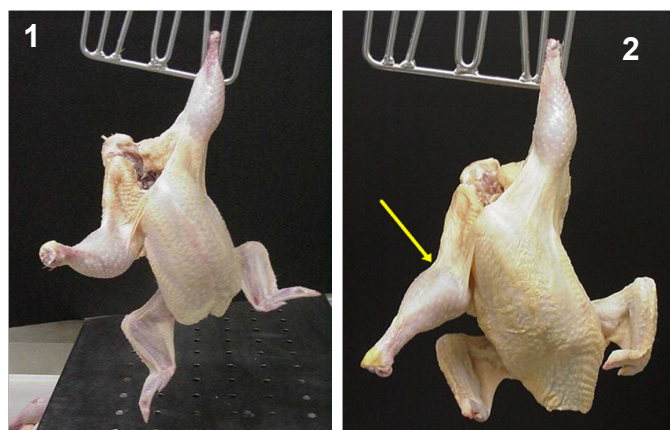
A Grade A carcass can have one disjoint but no broken bones. A Grade B carcass can have up to two disjoints, but only when no bones are broken. A Grade B carcass also can have one non-protruding broken bone with or without one disjoint. Any more disjoints or broken bones would downgrade the carcass to a Grade C. Any carcass with a protruding broken bone is automatically a Grade C.

A number of joints most likely to be affected include:

- The knee, which is located between the thigh and the drumstick
- The hip, which is located between the thigh and the main part of the body
- The elbow, which is located between the second and third joints of the wing
- The shoulder, which is located between the wing and the main part of the body

Examples of various possible disjoints are shown in Figures 9-15.

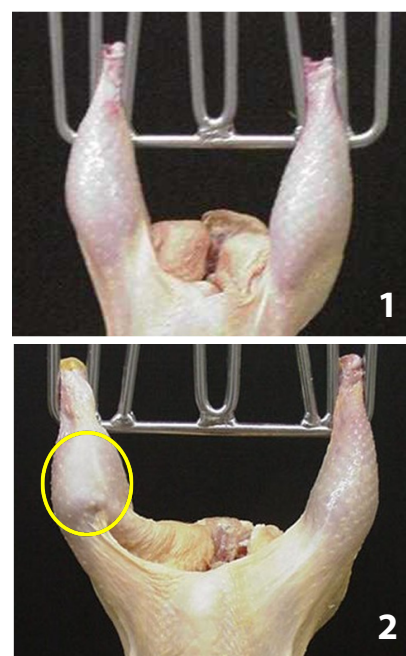
Figure 9. Comparing chicken carcasses hung by one leg and with (2) and without (1) a disjointed knee



Figures 9 and 10 show examples of disjointed knees (the joint between the drumstick and thigh). In Figure 9, the carcasses are hung from the non-disjointed leg. In the left carcass, which is not disjointed, the drumstick points up. In the right carcass, which has a disjoint, the drumstick points down.

In Figure 10, the carcasses are hung by both legs. In such a position, it is hard to detect a disjoint in the leg since it is artificially straightened in order to be hung. To indicate a disjoint, some event coordinators twist the leg so the disjoint is visible. The left leg in the bottom carcass is twisted so the back of the ankle joint is showing rather than the typical front. The result is a displaced knee joint.

Figure 10. Comparing chicken carcasses hung by both legs and with (2) and without (1) a disjointed knee



Figures 11–13 show examples of disjointed hips (the joint between the thigh and the main body of the carcass). In Figure 11, the carcasses are hung by a single leg. In the left carcass, which does not have a disjoint, the drumstick points up. In the right carcass, which has a disjoint, the drumstick points to the side instead. In Figures 12 and 13, the carcasses are hung by both legs. As in Figure 10, the left leg of the bottom carcasses is twisted to make the disjointed hip more obvious.

The carcasses are hung from the back of the shackle in Figure 12, while in Figure 13 they are hung from the front. The disjointed knee is clearly shown in each case, appearing slightly different.

Figures 14 and 15 show examples of carcasses with disjoints in the wings. In Figure 14, it is the elbow

Figure 11. Comparing chicken carcasses hung by one leg and with (2) and without (1) a disjointed hip

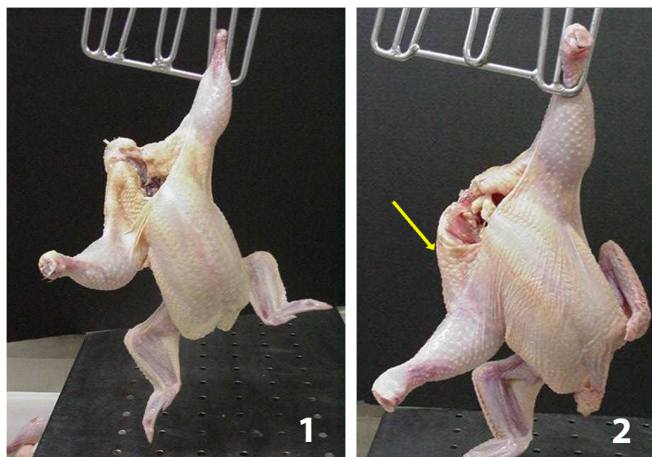


Figure 12. Comparing chicken carcasses hung by both legs from the back of the shackles with (2) and without (1) a disjointed hip

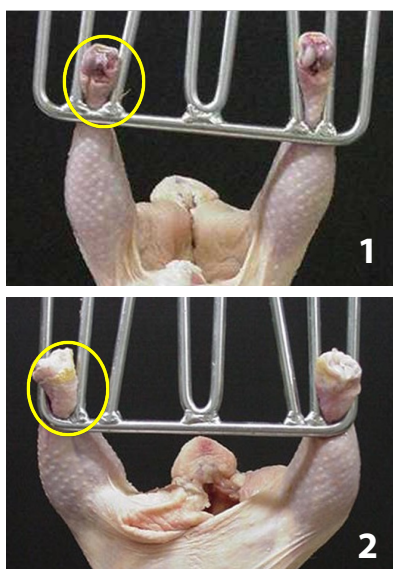


Figure 13. Comparing chicken carcasses hung by both legs from the front of the shackles with (2) and without (1) a disjointed hip

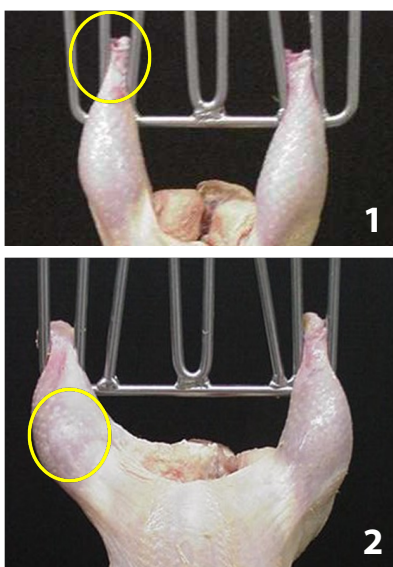


Figure 14. Comparing ready-to-cook chicken carcass hung by both legs, with (2) and without (1) a dislocated elbow

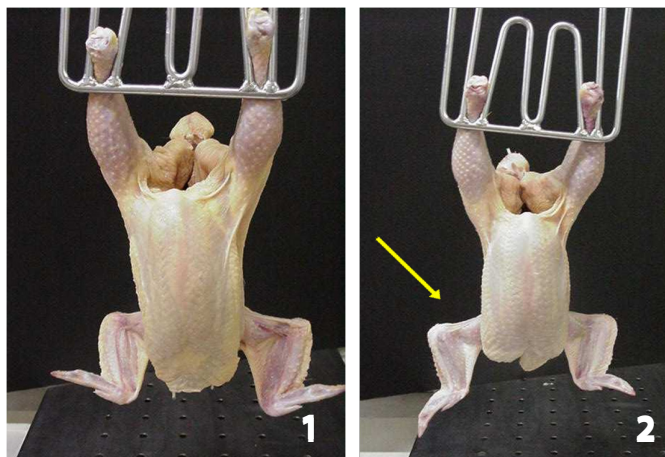
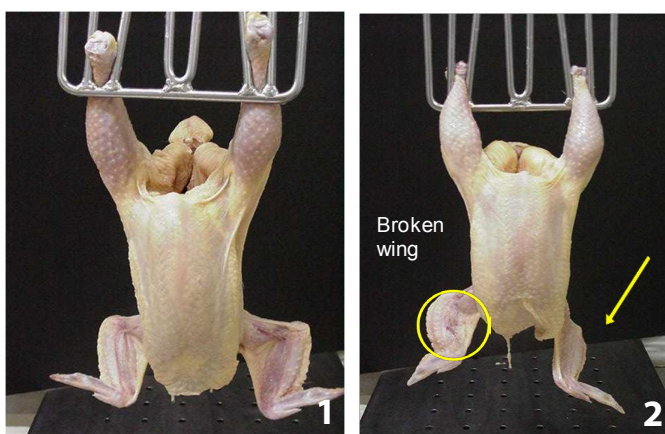


Figure 15. Comparing ready-to-cook chicken carcass hung by both legs, with (2) and without (1) a dislocated shoulder



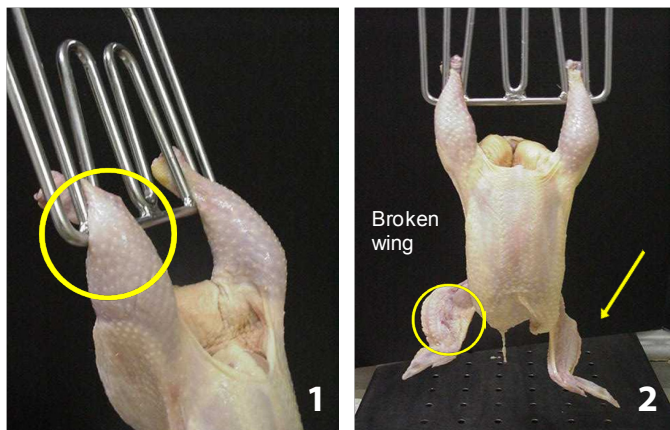
that is disjointed. In the affected carcass, the wing tip points down rather than up. In Figure 15, the shoulder is disjointed. The wing sits back on the shoulder, and the wing tip points down.

As indicated in Table 1 on Page 2, a Grade A carcass cannot have any broken bones, protruding or not. A Grade B carcass can have one broken non-protruding bone, as long as there is no more than one disjoint present as well. A broken wing in the mid-portion is considered a single broken bone, even though two bones—radius and ulna—are broken in the wing.

Figure 16 shows examples of broken non-protruding bones in the drumstick (1) and mid-section of the right wing (2).

It is important to remember that participants in a poultry judging event cannot touch any of the carcasses being graded. It is possible, however, to handle the shackles from which the carcasses are suspended.

Figure 16. Photographs of ready-to-cook chicken carcasses with a broken, non-protruding bone in the drumstick (1) and a broken non-protruding bone in the wing (2)



When looking for broken bones in the leg, tilt the shackle slightly and look for bends in the legs (see Figure 16). When looking for broken or disjointed bones in the wing, you can gently move the shackle in a half circle back and forth and watch the movement of the wing. A broken and disjointed bone is more likely to flop when the shackle is twisted in this manner. You also can detect a broken bone by looking at the curvature of the wing. A bent wing bone indicates it is probably broken (see Figure 16).

If any broken bone breaks the skin so that the end of the broken bone can be protruding, it is automatically a Grade C carcass.

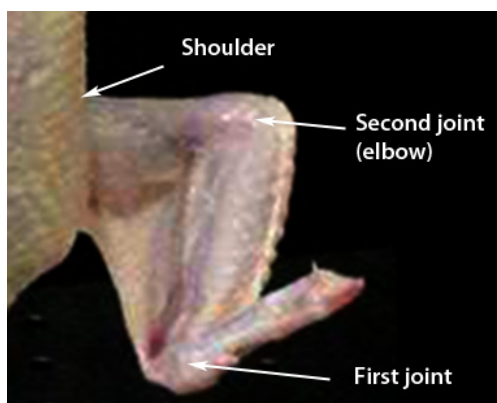
Missing Parts

The parts to be considered when evaluating a ready-to-cook carcass for missing parts are the wings, tail and part of the back area. It should be noted that the carcass weight does not play a role in judging carcasses for missing parts.

Wing

Wings can be missing to the first, second, or third joint (see Figure 17). When a wing is missing to the first joint, only the wing tip has been removed. The wing tip is not an economically important part of the carcass. When a wing is missing to the second joint, both the wing tip and flat have been removed. When a wing is missing to the third joint, the entire wing is missing with both the flat and drumette having been removed. The flat and drumette are used for making buffalo wings, and thus have more economical importance than the wing tip.

Figure 17. Photograph indicating the three joints of a chicken wing



As indicated in Table 1 on Page 2, a Grade A carcass may have one or both of the wing tips missing (see Figure 18). A Grade B carcass can have one or both of the wings missing to the second joint. Finally, any carcass missing at least one entire wing is a Grade C.

Tail

A Grade A carcass may have all or part of the tail missing where the tail joins the back (see Figure 19).

Figure 18. Chicken carcasses with various portions of a wing missing. Carcasses 1 and 2 are Grade A, carcass 3 is a Grade B, and carcass 4 is a Grade C.

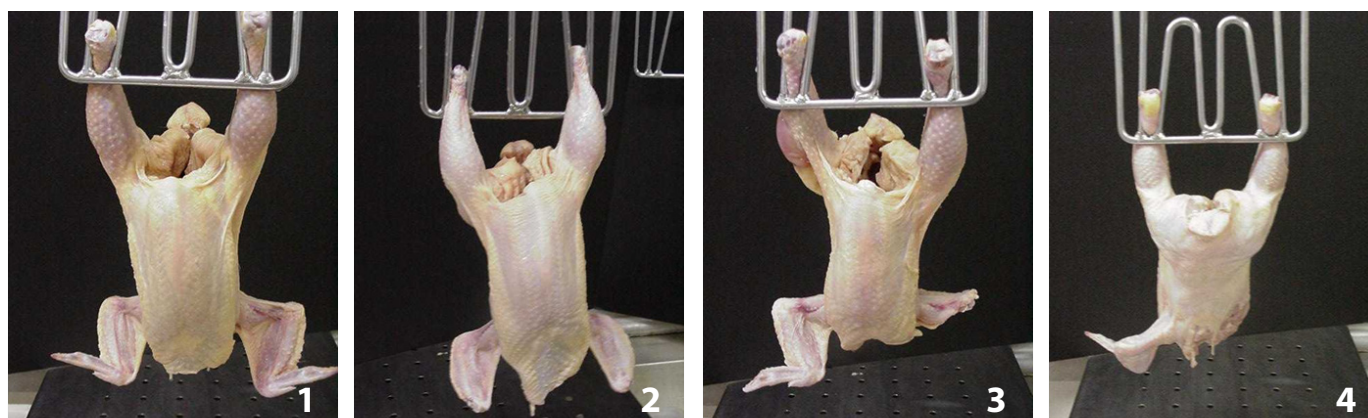


Figure 19. Chicken carcasses with (1) and without (2) a tail

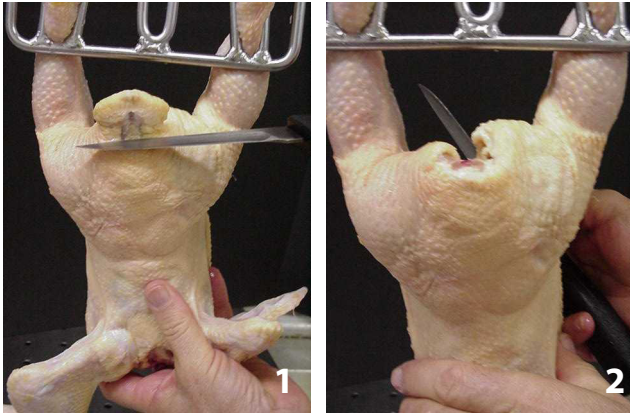
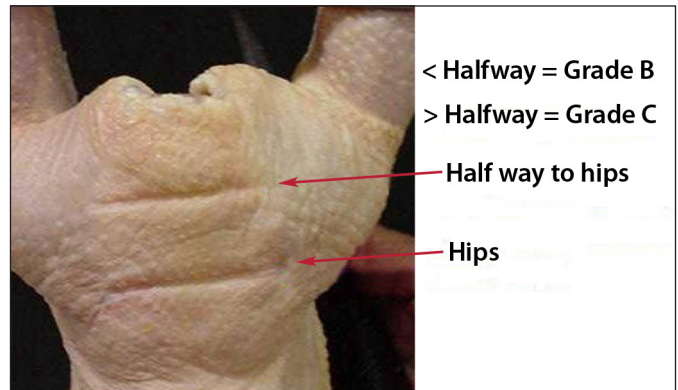


Figure 20. The important portions of the back of a poultry carcass when evaluating the grade based on the missing back criteria



Back

As indicated in Table 1 on Page 2, a Grade A carcass can have the tail missing but cannot have any portion of the back missing past the base of the tail.

As shown in Figures 20, a Grade B carcass can have a portion of the back missing no wider than the base of the tail and less than half way between the base of the tail and the hips. If the missing back portion extends past this halfway point but not past the hips, it is a Grade C carcass.

Examples of Grade B and C carcasses, downgraded because of missing back, are shown in Figure 21. In carcass 1 the portion of the back that is missing is less than halfway between the base of the tail and the hips. In carcass 2 the portion of the back missing is more than halfway.

Figure 21. Chicken carcasses with different portions of the back missing

