

PARTS OF THE NATIONAL FFA POULTRY CAREER DEVELOPMENT EVENT

LIVE POULTRY

Market Broilers for Placing

Egg-Type Hens for Placing

Oral Reasons for Placing



READY-TO-COOK POULTRY

Chicken/Turkey Carcasses/Parts for Grading

Chicken/Turkey Carcasses for Placing

Oral Reasons for Placing



SHELL EGGS

Shell Eggs for Interior Quality Grading

Shell Eggs for Exterior Quality Grading

Evaluative Criteria for Exterior Quality Grading



FURTHER-PROCESSED POULTRY

Boneless Further Processed Products for Evaluative Criteria

Bone-In Further Processed Products for Evaluative Criteria

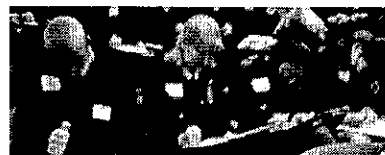
Chicken Carcass Parts for Identification



POULTRY PRODUCTION, MANAGEMENT, AND SCIENCE

Written Examination

Team Activity



EVALUATING BROILERS FOR MEAT PRODUCTION

Meat-type, broiler cockerels or pullets will be used in Class 1 (a placing class of 4 birds). The broilers will be the same age, same strain, and grown under the same environmental conditions. A form of identification will be used to identify each bird. Broilers may or may not have trimmed beaks. The participant may touch the birds inside the cages using proper handling procedures. [Those proper handling procedures are described in the next section, entitled **Proper Handling of Market Broilers**. [CAUTION: Excessive handling may cause downgrading of the birds.]

A set of oral reasons (Class 3) may be required for Class 1. Refer to the **Presenting Oral Reasons** section of this manual for further information.

BROILER SELECTION CRITERIA

Body conformation and fleshing are factors to consider when evaluating broilers for meat production.

Scorecard for Broilers	
<i>Criteria</i>	<i>Importance</i>
Body Confirmation	45% of Total
Fleshing	45% of Total
Finish	10% of Total

Body Conformation

Body conformation of a broiler refers to the bird's structure (the shape and size of body parts relative to each other). A bird's body conformation can be evaluated objectively because the structural dimensions can be measured and recorded, similarly as for the height and waist measurements of a human body.

Evaluating a broiler's body conformation requires measuring the (a) width across shoulders, (b) length of back, (c) depth of body, (d) length of keel, (e) spring of ribs, and (f) width across hips. Measurements can be estimated by touching the birds with the hands.

Body length should be proportionately larger than the body width. The width across shoulders (from wing to wing) should be 75% of the length of back. Conversely, the length of back (from base of neck to base of tail) should be 1.5 times greater than the width across shoulders.

The depth of body (from backbone to keel bone) should equal or exceed the width across shoulders, at both the front and rear of the keel bone. This will make the keel parallel to the back. The length of keel should be equal to or greater than the width across shoulders.

The spring of ribs (width across the back between the hips and wings) should equal the width

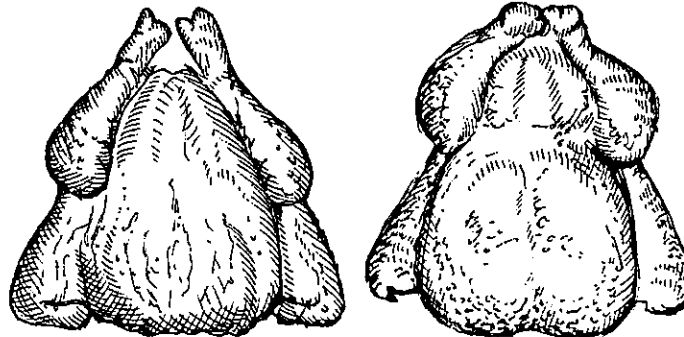
across shoulders. The width across hips should exceed the width across shoulders.

Fleshing

Fleshing is closely related to body conformation. Fleshing on a broiler refers to the distribution of muscle and the overall quantity of breast meat (the choice cut in the poultry product market). Similar to body conformation, fleshing can be objectively measured.

Evaluating a broiler's fleshing requires measuring the (a) length of muscling, (b) depth of muscling, (c) width of muscling, and (d) carry of muscling. Measurements can be estimated by touching the birds with the hands.

Length of muscling is determined by the length of keel. The length of muscling should extend the full distance along the keel bone and be approximately 1.5 times greater than the width of muscling.

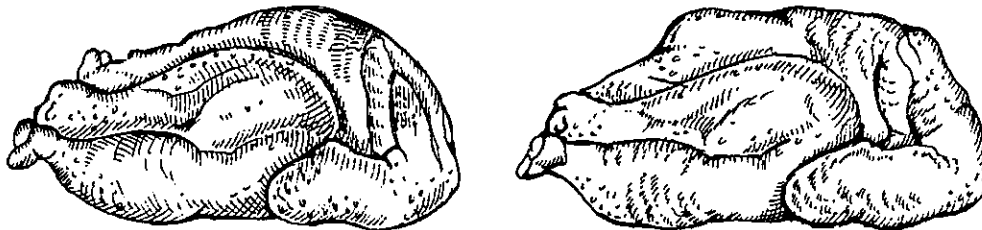


A short breast indicates length of muscling almost equal to width of muscling.

A long breast indicates length of muscling almost 1.5 times greater than width of muscling.

The illustration above shows two broiler carcasses to clarify descriptions when comparing the length of muscling of a short-breasted bird with a long-breasted bird.

Depth of muscling is determined by the depth of body. The depth of muscling should be equal to or greater than the width of muscling. The keel bone should also run parallel to the backbone.



A shallow breast indicates poor depth of muscling. The illustration also shows the keel bone nonparallel to the backbone.

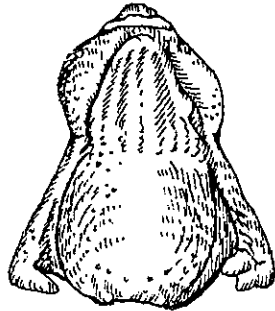
A deep breast indicates good depth of muscling. The illustration also shows the keel bone parallel to the backbone.

The illustration above shows two broiler carcasses to clarify descriptions when comparing the depth of muscling of a shallow-breasted bird with a deep-breasted bird.

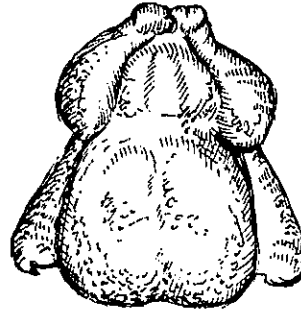
Width of muscling and carry of muscling are related.

The width of muscling is determined by the width of breast between the points of wing attachment. The carry of muscling is determined by how well the breast meat width carries from the front (at the points of wing attachment) to the rear (at the end of the keel bone).

The breast muscling should be wide and flat in front, and this width and flatness should carry to the rear of the breast. The muscling should not come to a sharp point at the rear of the keel, but should form a blunt end.



A narrow breast indicates poor width of muscling. The muscling is rounded and the width does not carry from the front to the rear of the bird. This is referred to as a "tapered breast".



A wide breast indicates good width of muscling. The muscling is flattened and the width carries well from the front to the rear of the bird.

The illustration above shows two broiler carcasses to clarify descriptions when comparing the width and carry of muscling of a narrow breasted bird with a wide breasted bird.

Finish

The finish (ability to carry some fat under the skin) is a criterion for evaluating market broilers.

Miscellaneous

The thigh and drumstick are not as popular for meat consumption; however, they should be meaty at the center of the long axis of the bone. Broilers having well-muscled breasts will have well-muscled thighs and drumsticks.

PROPER HANDLING OF BROILERS

The participant may touch each of the broilers but only inside the cage. After quietly opening the cage door, reach into the cage and maneuver the bird into position for examination. Using both hands, examine the bird for (1) deformities, (2) body conformation, and (3) breast meat quantity. Allow the bird to stand on its legs.

Determine the width of body and muscling across the front of the bird's body (upper right figure). Face one side of the bird. Place the thumb and index finger of one hand on the back of the bird at each point of wing attachment. Place the thumb and index finger of the other hand on each side of the front of the breast directly below the position of the opposite hand. Next, determine the length of keel and muscling down the length of the bird's body (upper left figure). Maintain one hand's position on the bird's back and move the other hand from the front to the

rear of the keel bone.

Determine the depth of body and muscling of the bird's body (upper left figure). Face the rear of the bird. Place the thumb and index finger of one hand on the back of the bird at each point of wing attachment. From the rear of the bird, place the other hand between the bird's legs. Place the thumb and index finger on each side of the front of the breast directly below the position of the opposite hand. Next, determine the width of back down the length of the bird's body (upper right figure). Face the front of the bird and place each hand on opposite sides of the bird's back. The palms of the hands should be pressed against the body with the fingers extended to the rear of the bird.

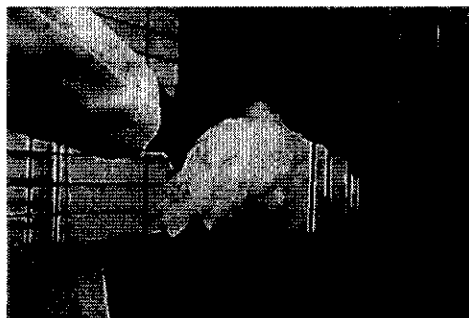
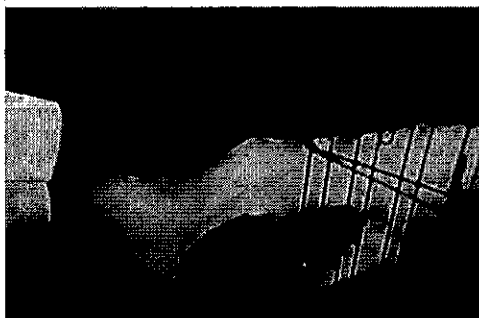
Determine the width and carry of the breast down the length of the bird's body (right figure). Face the rear of the bird and place one hand on top of the shoulders. Press the palm of the other hand against the bird's breast and run the fingers along the breast from the front to the rear.

PROPER HANDLING OF MARKET BROILERS

The participant may touch each of the broilers but only inside the cage. After quietly opening the cage door, reach into the cage and maneuver the bird into position for examination. Using both hands, examine the bird for (1) deformities, (2) body conformation, and (3) breast meat quantity. Allow the bird to stand on its legs.



Determine the width of body and muscling across the front of the bird's body (upper right figure). Face one side of the bird. Place the thumb and index finger of one hand on the back of the bird at each point of wing attachment. Place the thumb and index finger of the other hand on each side of the front of the breast directly below the position of the opposite hand. Next, determine the length of keel and muscling down the length of the bird's body (upper left figure). Maintain one hand's position on the bird's back and move the other hand from the front to the rear of the keel bone.



Determine the depth of body and muscling of the bird's body (upper left figure). Face the rear of the bird. Place the thumb and index finger of one hand on the back of the bird at each point of wing attachment. From the rear of the bird, place the other hand between the bird's legs. Place the thumb and index finger on each side of the front of the breast directly below the position of the opposite hand. Next, determine the width of back down the length of the bird's body (upper right figure). Face the front of the bird and place each hand on opposite sides of the bird's back. The palms of the hands should be pressed against the body with the fingers extended to the rear of the bird.

Determine the width and carry of the breast down the length of the bird's body (right figure). Face the rear of the bird and place one hand on top of the shoulders. Press the palm of the other hand against the bird's breast and run the fingers along the breast from the front to the rear.



EVALUATING EGG-TYPE HENS FOR PRODUCTION



Egg-type hens will be used in Class 2 (a placing class of four birds). The hens will be the same age, same strain, and raised under the same environmental conditions. A form of identification will be used to identify each bird. Hens may or may not have trimmed beaks. The participant may touch the birds inside and outside the cages using proper handling procedures. Those proper handling procedures are described in the next section, entitled **Examining a Placing Class of Egg-Type Hens**.

A set of oral reasons (Class 3) may be required for Class 2. Refer to the **Presenting Oral Reasons** section of this manual for further information.

Competence in identifying egg-type hens with superior production characteristics is critical to a successful egg production enterprise. Egg-type hens will have characteristics indicating past production. Thus, the emphasis should be on the number of eggs laid by each hen.

Pigmentation and body characteristics such as handling qualities and abdominal capacity, plumage condition and stage of molt, constitutional vigor and vitality, and head and head parts govern the final placing of the hens, and are discussed in this section.

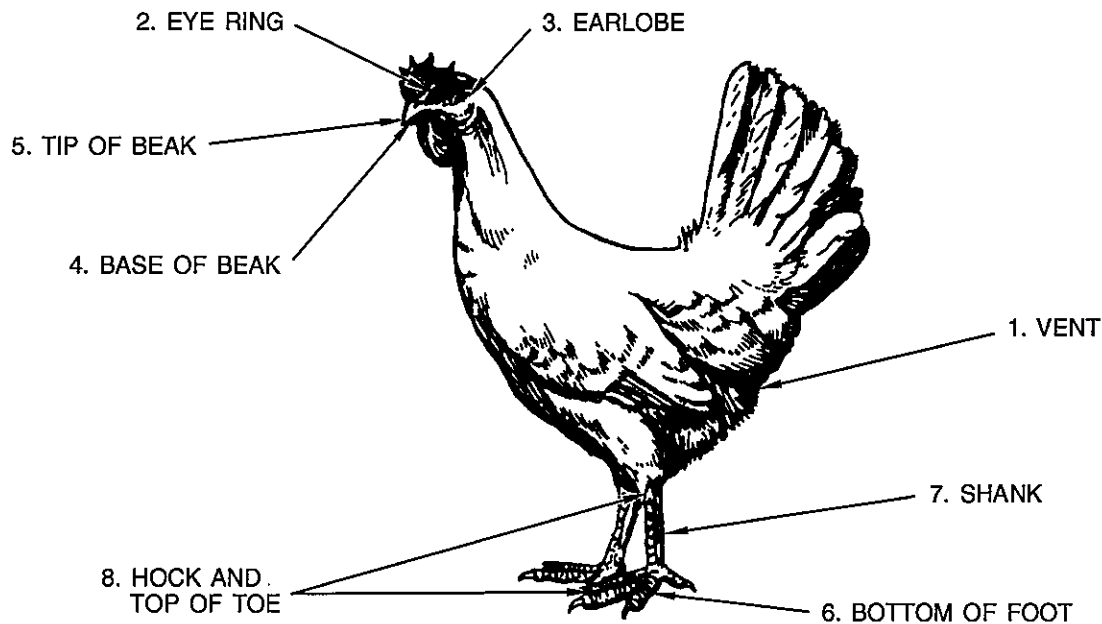
EGG-TYPE HEN SELECTION CRITERIA	
<i>Characteristics and Qualities</i>	<i>Emphasis (Percentage of Total)</i>
Pigmentation	35
Handling qualities & abdominal capacity	35
Plumage condition & molt	15
Constitutional vigor & vitality	10
Head & head parts	5

PIGMENTATION (35% emphasis)

Pigmentation is a term used to describe the presence or absence of yellow pigment (xanthophyll pigment) in the skin, shanks, and feet of the egg-type hen. Leghorns or inbred crosses of Leghorn type normally exhibit yellow pigmentation in the skin and other parts of the body. The color of the yellow pigment may be exhibited in varying degrees of intensity.

Yellow pigment fades (bleaches) from body parts as a hen lays eggs. Therefore, the order of fading and the rate at which pigment fades are important considerations when evaluating hens. The participant must know and accurately "read" pigmentation as a good indicator of the number of eggs laid by each hen.

THE ORDER THAT BODY PIGMENT FADES



THE RATE AT WHICH BODY PIGMENT FADES		
Body Part	Approximate Number of Weeks to Fade (Cumulative)	Average Number of Eggs Laid (Cumulative)
Vent	0 to 2	0 to 10
Eye ring	2 to 2.5	10 to 12
Earlobe	2.5 to 3	12 to 15
Beak, 1/3 bleached (base)	3 to 4	15 to 20
Beak, 2/3 bleached (tip)	4 to 5	20 to 25
Beak, entire	5 to 8	35
Bottom of foot	8 to 12	68
Shank	12 to 20	159
Hock and top of toe	20 to 30	180

Hens that have laid large numbers of eggs are usually bleached in all the body parts. Non-producing hens or hens in the early stages of egg-laying usually show pigmentation in the body parts. Hens that show signs of returning pigment are decreasing in egg production. Hens regain pigmentation when egg production ceases. Pigment returns to the body parts in the same order that it faded. Hens that show signs of re-pigmentation are poor producers.

Pigment returns nearly three times quicker than it took to fade. Four factors influence the speed at which pigment returns to the body parts are:

- the amount of pigment in the feed,
- the health and vitality of the hen,
- whether the hen is confined or allowed to range, and

- the size and coarseness of the hen.

Although fading of pigment is a reasonably good indicator of egg production, it is not entirely accurate. Factors that affect rate of pigment fading are:

- body size,
- health of bird,
- feed composition,
- amount of pigment at start of egg laying, and
- environmental temperature.

Pigmentation is very important when placing a class of egg-type hens. One must accurately “read” pigment to effectively evaluate hens, and be aware that other selection considerations may occasionally supersede the pigmentation factor.

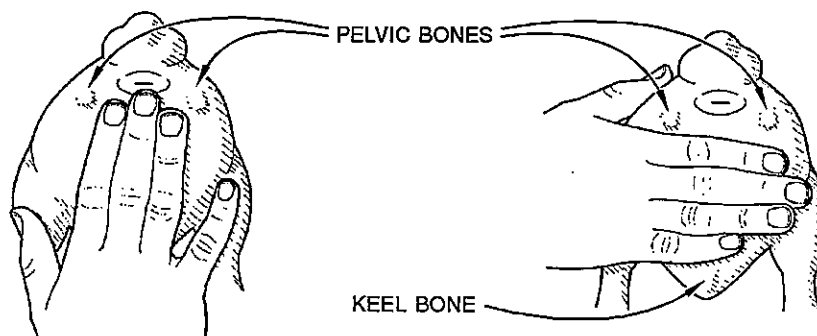
HANDLING QUALITIES AND ABDOMINAL CAPACITY (35% EMPHASIS)

If two or more of the egg-type hens in the class are similar in pigmentation, use handling qualities-abdominal capacity to distinguish among them.

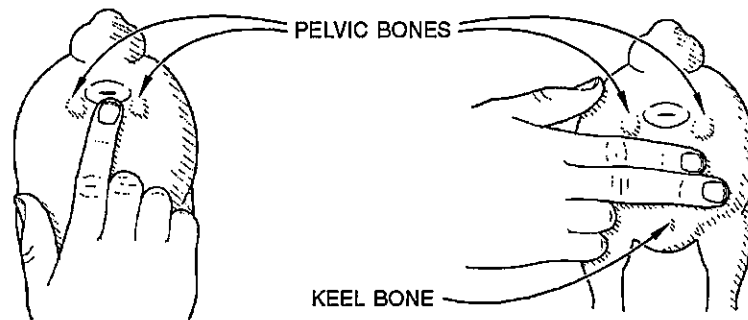
Handling qualities refer to the general condition of the abdomen. It is a good indicator of egg production. The abdomen of a layer is wide, soft (lacks fat), and expanded. Her vent is moist, large, and oblong in shape. In contrast, the abdomen of a non-layer is narrow, hard (fatty), and contracted. Her vent has some moistness but is small and round in shape. [CAUTION: Pubic bones can become disjointed and/or broken because of excessive handling during a Poultry Career Development Event. Mishandling of birds will result in disqualification of the participant from the event.]

Abdominal capacity of a hen is measured and expressed by one’s fingers’ width. For example, a 3 fingers’ width by 4 fingers’ width measurement means a hen is three fingers wide between the pelvic bones and four fingers wide between the pelvic bones and the keel bone. This example measurement indicates excellent abdominal capacity. A 1 finger’s width by 2 fingers’ width measurement indicates poor abdominal capacity.

MEASURING ABDOMINAL CAPACITY (Feathers Removed for Illustration Purposes)



A 3 fingers' width × 4 fingers' width indicates excellent abdominal capacity.



A 1 finger's width × 2 fingers' width indicates poor abdominal capacity.

PLUMAGE CONDITION AND MOLT (15% emphasis)

If two or more of the egg-type hens in the class are similar in pigmentation and handling qualities-abdominal capacity, use plumage condition and molt to distinguish among them.

Two factors considered in appraising the plumage (feathers) of hens include plumage condition and rate of molt (shedding of feathers).

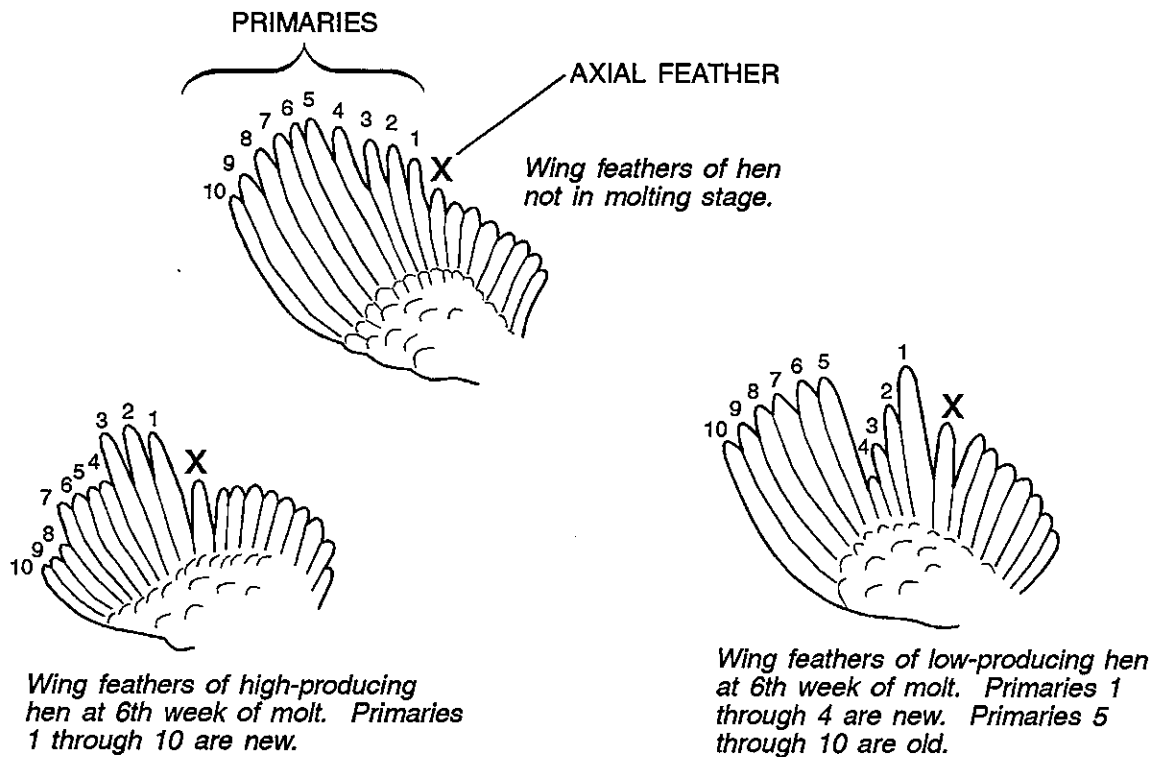
Feathers of a high-producing hen are frayed, ragged, dirty and dull (indicates old feathers that have not molted). Feathers of a low-producing hen are smooth, show little or no wear, and exhibit a shiny appearance (indicates growth of new feathers as a result of molting). Plumage condition varies greatly with housing and management of birds. [CAUTION: Feathers may break due to excessive handling. Mishandling of birds will result in disqualification of the participant from the event.]

A high-producing hen usually molts late in the fall and winter and spends a minimum amount of time molting. She should not molt until after 12 to 14 months of egg production. A low-producing hen has a long molting period lasting up to 18 weeks in length. Although she may continue to lay during molting, it is usually at a reduced rate.

Feathers molt in the following order:

- head,
- neck,
- body,
- primaries,
- main tail,
- secondaries.

In evaluating egg-type hens, observe the primaries to determine rate of molt. Primaries molt in order from the axial feather outward, starting at primary feather #1 and ending at primary feather #10. Fast molters drop three to four feathers at a time; slow molters drop one feather at a time.



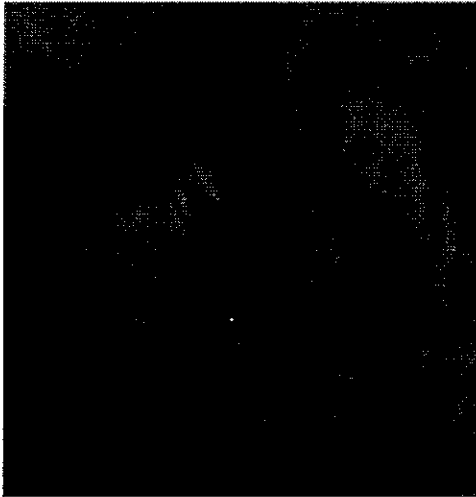
CONSTITUTIONAL VIGOR AND VITALITY (10% emphasis)

A healthy and vigorous egg-type hen produces eggs for a long time. A high-producing hen appears vigorous, alert, and quick in movement. In contrast, a non-producing hen is sluggish.

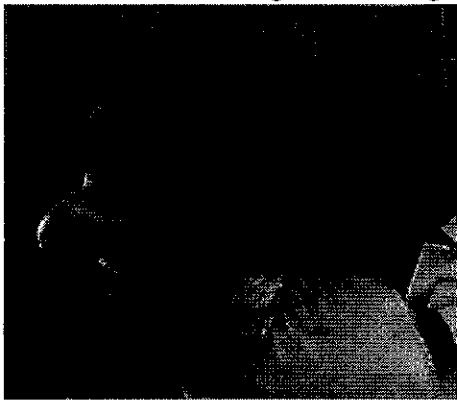
HEAD AND HEAD PARTS (5% emphasis)

If not trimmed, a productive hen's beak is short. The hen's eyes are bright, alert, and round. Her skull is flat from side to side. Her comb and wattles are large, bright red, and glossy. They feel velvety soft and warm when touched. The beak of a non-producing hen is long (if not trimmed). The hen's eyes are dull, sleepy, and oblong. Her skull is rounded from side to side. Her comb and wattles are shrunken and dull. They feel rough and cool when touched.

COMPARISON OF BODY PARTS IN EXCELLENT AND POOR EGG-TYPE HENS *



Ventrals of a High-Producing Hen (left) and a Low-Producing Hen (right)



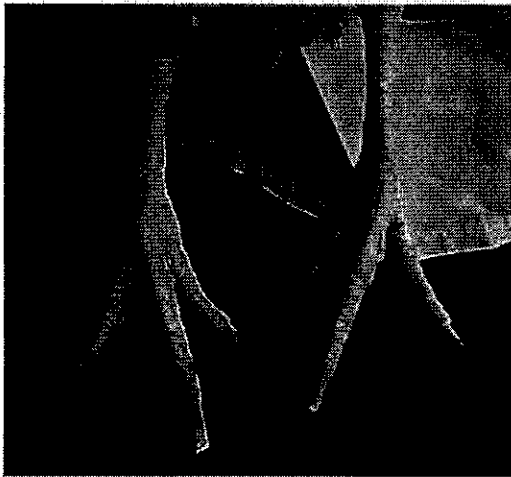
Heads of a High-Producing Hen (left) and a Low-Producing Hen (right)



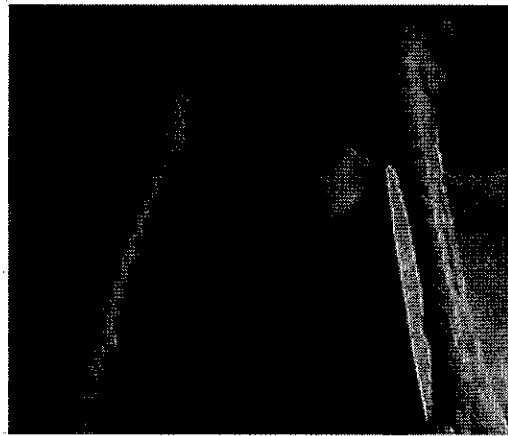
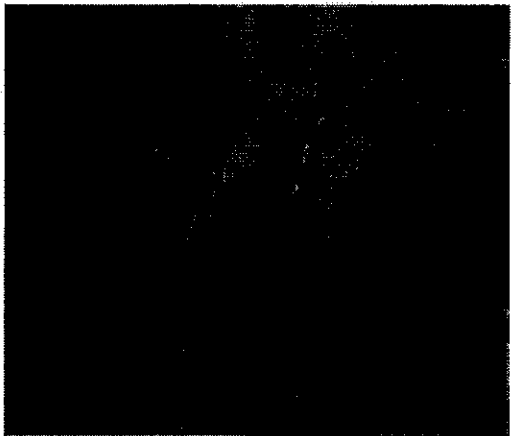
Bottoms of Feet of a High-Producing Hen (left) and a Low-Producing Hen (right)

* Photographs are courtesy of the Department of Poultry Science, Texas A&M University.

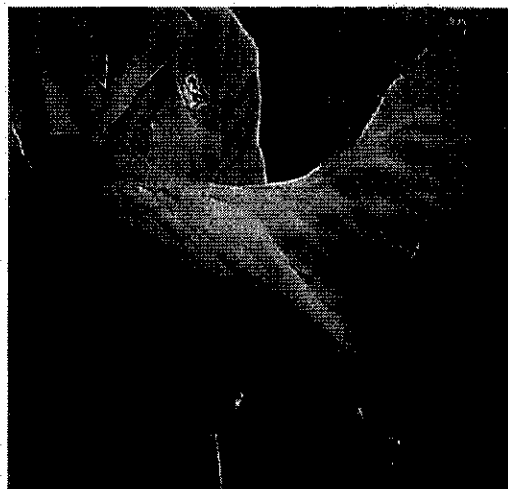
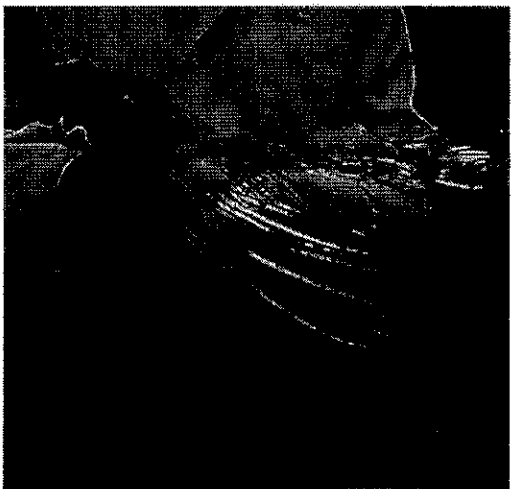
COMPARISON OF BODY PARTS IN EXCELLENT AND POOR EGG-TYPE HENS *
(continued)



Front of Shanks & Tops of Toes: a High-Producing Hen (left) and a Low-Producing Hen (right)



Backs of Shanks of a High-Producing Hen (left) and a Low-Producing Hen (right)



Variation in Plumage Condition of a High-Producing Hen (left) and a Low-Producing Hen (right)

* Photographs are courtesy of the Department of Poultry Science, Texas A&M University.

EXAMINING A PLACING CLASS OF EGG-TYPE HENS

Placing the four egg-type hens in Class 2 is done after making comparisons among the birds.

A placing class requires comparing each bird in the class to the other birds in that class and to a mental image of the "ideal bird." Recording brief notes about each bird helps in reaching a final decision.

Grouping the birds reduces the number of decisions to make. Grouping is a process of elimination. Grouping birds includes locating a top bird, bottom bird, top pair of birds, middle pair of birds, or bottom pair of birds.

After learning the factors used to evaluate egg-type hens, a participant should follow an orderly procedure in comparing the hens in the placing class.



Stand away from the cages and view the hens as a group, and record observations.

Stand near the cages and observe each hen for:

1. bleaching of yellow pigment in the shanks, feet, and beak
2. condition of plumage
3. vigor and vitality
4. head characteristics

Record observations.

Finally, evaluate each hen for these and other body characteristics by touching the birds while they are inside and outside the cages. Use proper handling procedures as described in the next section, **PROPER HANDLING OF EGG-TYPE HENS**.

PROPER HANDLING OF EGG-TYPE HENS *

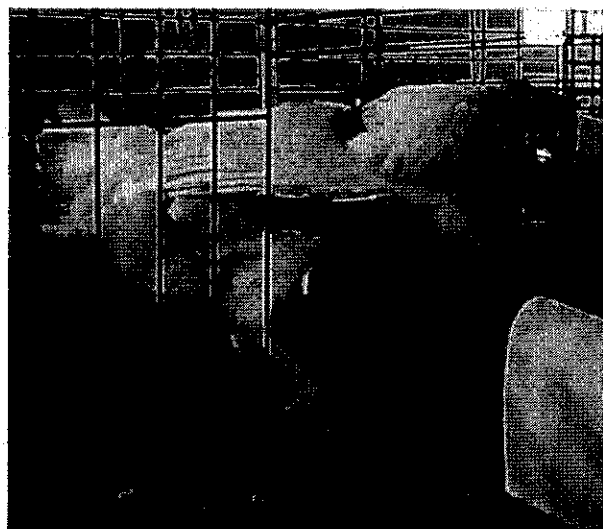
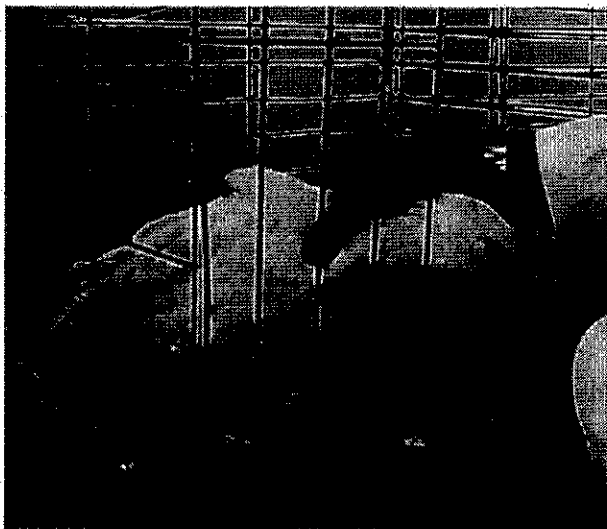
Follow the steps listed on these four pages to examine each egg-type hen for:

- bleaching of pigment in the body parts
- condition and capacity of the abdomen
- plumage condition and rate of molt of the wing primaries
- vigor and vitality, and
- characteristics of the head parts.

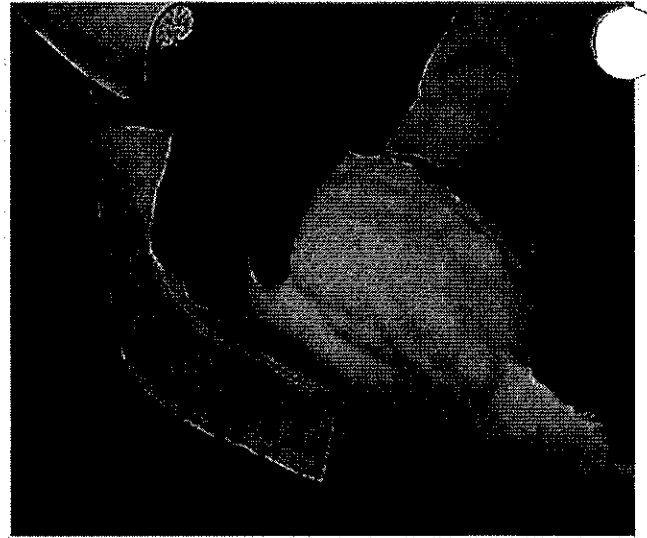
The participant may touch the egg-type hens inside and outside the cages. However, proper handling procedures must be used at all times.



Step 1 — Approach the cage slowly and open the door quietly. Reach into the cage and grasp the hen. Use both hands to hold the wings, thus preventing injuries caused by flapping wings and a struggling body. Maneuver the hen until her head points to the door.



Step 2 — With one hand holding the hen's wings, place the other hand under the keel bone with the hocks between the fingers of the free hand. Rotate the hen's body until the head points toward the open cage door. Lift and remove the hen (head first) from the cage.



Step 3 — Holding the hen's legs gently but firmly with one hand, position the the hen's body with the keel bone resting on the palm of the other hand. After holding the hen in this position momentarily to calm her, examine the body. Remove the hand supporting the hen's keel bone and extend the fingers of the hand across the hen's back. Move the hand down the hen's back (from the juncture of the wings to the tail base) to determine the length of back. Determine the depth of body also.



Step 4 — Position the hen's head upward. Examine the hocks, legs, feet, and toes for pigmentation. Inspect the legs and feet for any signs of abnormalities. Position the hen's head downward. Examine the vent for pigmentation and handling qualities by spreading the feathers and vent with the thumb and index finger.



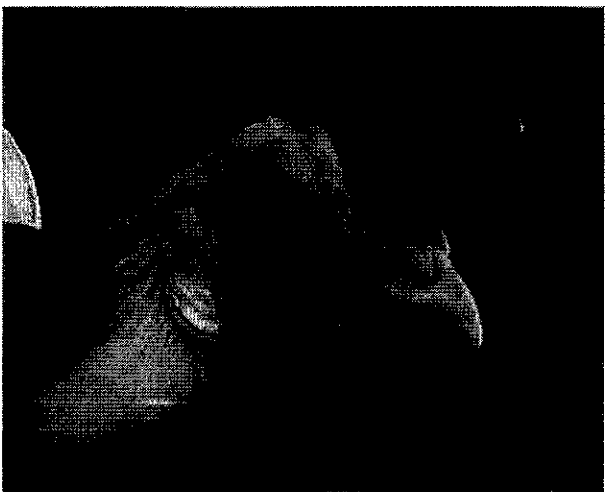
Step 5 — Maintain the hen's body in the same position (with the head downward). Gently roll a section of skin in the abdominal region between the thumb and finger to feel for fat condition and softness.



Step 6 — Maintaining the hen in the same position, measure the abdominal capacity. Determine the spread between pelvic bones and tip of keel bone with the fingers of the free hand. Then, determine the spread between the pelvic bones.



Step 7 — Position the hen to allow one of the wings to be opened. Use the free hand to fan out the wing's feathers. Check the primaries for signs of molt. An excellent producer has all old feathers (upper left photograph). A poor producer or a hen that is no longer in production shows new primary feathers emerging (upper right photograph).



Step 8 — Lift the hen with her head positioned for inspection. Examine the head's characteristics, feeling the parts with the free hand. After completing the examination, return the hen (head first) to the cage with both hands. Lower the hen gently to the cage floor. Release the hen and quietly close the cage door.

EVALUATING READY-TO-COOK POULTRY CARCASSES AND/OR PARTS

During processing, chicken and turkey carcasses and parts are inspected and graded by the USDA to ensure wholesomeness and compliance with quality standards. To serve as a means of achieving competency and skill in evaluating processed carcasses and parts, the National FFA Poultry Evaluation Career Development Event includes three ready-to-cook poultry classes.

- Class 4 is a quality grading class of ten (10) ready-to-cook chicken and/or turkey carcasses and/or parts. The class may consist of any combination of carcasses and parts (for example, there may be six broiler carcasses, three broiler parts, and one turkey carcass, or there may be five broiler carcasses and five turkey carcasses). Each broiler carcass will weigh more than two pounds but not more than six pounds. Each turkey carcass will weigh more than six pounds but not more than sixteen pounds. Carcasses and parts are to be graded based on the latest standards (see NOTE below). USDA quality grades are A, B, and C. NG designates nongradable. More than one carcass or part of the same USDA quality grade may be in the class. **IMPORTANT:** Feathers, pin feathers, hair, preen glands, visible scales, excess skin, and medullary bone are not considered in this class. The carcasses should be displayed on shackles. Parts will be displayed under plastic, or they will be kept moist. Participants may not touch the carcasses or parts. The participants may rotate the shackles, if used, to view the carcasses.
- Class 5 is a placing class of four (4) ready-to-cook chickens or turkey hens and/or toms. Each chicken carcass will weigh more than two pounds but not more than six pounds. Each turkey carcass will weigh more than six pounds but not more than sixteen pounds. The carcasses are to be placed after predetermining their USDA quality grades based on the latest standards (see NOTE below). USDA quality grades are A, B, and C. NG designates nongradable. More than one carcass of the same USDA quality grade may be in the class. **IMPORTANT:** Feathers, pin feathers, hair, preen glands, visible scales, excess skin, and medullary bone are not considered in this class. The carcasses should be displayed on shackles. Participants may not touch the carcasses. The shackles may be rotated for viewing the carcasses.
- Class 6 is the oral reasons class for Class 5. The participant should use USDA criteria and terminology when defending the placing of carcasses. Refer to the PRESENTING ORAL REASONS section of this manual.

A “Summary of Specifications for Standards of Quality for Individual Carcasses and Parts” table is found on the next page. Two pages of images and USDA grades for representative whole carcasses and parts follow the table.

The latest editions of the *Regulations Governing the Voluntary Grading of Poultry Products and Rabbit Products and U.S. Classes, Standards, and Grades* (7CFR Part 70) and the *Poultry-Grading Manual* (USDA Handbook #31) include a discussion of uniform standards for grading ready-to-cook poultry carcasses and parts. Two sets of USDA color photographs and scripts that illustrate grade assignments for whole fryers and fryer parts are available to supplement these publications. Refer to the REFERENCES section of this manual

**SUMMARY OF SPECIFICATIONS FOR STANDARDS OF
QUALITY FOR INDIVIDUAL CARCASSES AND PARTS***

(Not All Inclusive) (Minimum Requirements and Maximum Defects Permitted)

Factor*	A Quality		B Quality		C Quality <small>NOTE</small>
CONFORMATION:	Normal.		Moderate deformities.		Abnormal.
Breastbone	Slight curve or dent.		Moderately dented, curved, or crooked.		Seriously curved or crooked.
Back	Slight curve.		Moderately crooked.		Seriously crooked.
Legs and Wings	Normal.		Moderately misshapen.		Misshapen.
FLESHING:	Well fleshed, considering kind, class, and part.		Moderately fleshed, considering kind, class, and part.		Poorly fleshed.
FAT COVERING:	Well-developed layer – especially between heavy feather tracts.		Sufficient fat layer – especially on breast and legs.		Lacking in fat covering over all parts of carcass.
EXPOSED FLESH:					
	<u>Carcass</u>		<u>Part</u> ²	<u>Carcass</u>	
	<u>Breast & Legs</u>			<u>Breast & Legs</u>	
	<u>Elsewhere</u> ¹			<u>Elsewhere</u> ¹	
	<u>Carcass Weight</u>				
	<u>Minimum</u>				
	<u>Maximum</u>				
None	2 lb	1/4"	1"	No more than 1/3 of flesh exposed on each part of carcass (or each individual part) provided meat yield not appreciably affected.	
>2 lb	6 lb	1/4"	1 1/2"	Limit	
>6 lb	16 lb	1/2"	2"		
>16 lb	None	1/2"	3"		
DISCOLORATIONS:					
None	2 lb	3/4"	1 1/4"	1 1/4"	2 1/4"
>2 lb	6 lb	1"	2"	2"	3"
>6 lb	16 lb	1 1/2"	2 1/2"	2 1/2"	4"
>16 lb	None	2"	3"	3"	5"
DISJOINTED AND BROKEN BONES:	Carcass — 1 disjointed & no broken.		Carcass — 2 disjointed & no broken or 1 disjointed & 1 nonprotruding broken.		No
	Parts — Thighs with back portion, legs, or leg quarters may have femur disjointed from the hip joint.		Parts — May be disjointed, no broken.		Limit
	Other Parts — None.				
MISSING PARTS: (Whole carcass only)	Wing tips and tail.		Wing tips, 2 nd wing joint, and tail. Back area not wider than base of tail and extending half way between base of tail and hip joints.		Wing tips, wings, and tail. Back area not wider than base of tail extending to area between hip joints.
FREEZING DEFECTS: (Consumer packaged)	Slight darkening on back and drumstick. Overall bright appearance. Occasional pockmarks due to drying. Occasional small areas of clear, pinkish, or reddish colored ice.		May lack brightness. Few pockmarks due to drying. Moderate areas showing layer of clear, pinkish, or reddish colored ice.		Numerous pockmarks and large dried areas.

NOTE: Carcasses or parts not meeting specifications for C Quality are designated NG (nongradable).

¹ Maximum aggregate area of all exposed flesh. In addition, the carcass of part may have cuts or tears that do not expand or significantly expose flesh, provided the total aggregate length does not exceed the permitted tolerance for the weight range.

² For purposes of definition, the parts of the carcass shall be each wing, leg, entire back, and entire breast with each permitted to have one-third of the flesh exposed by cuts, tears, and missing skin. Refer to the Standards of Quality in the Poultry Grading Manual for the minimum requirements and maximum defects permitted on large carcass parts and other parts.

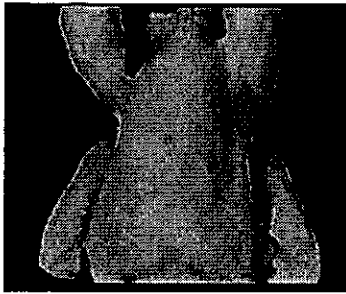
³ No limit on size, number of area, or intensity of discolorations and flesh bruises if such areas do not render any part of the carcass unfit for food.

* 7 CFR Part 70 – Regulations Governing the Voluntary Grading of Poultry Products and Rabbit Products and U.S. Classes, Standards, and Grades (1999 edition) and the Poultry Grading Manual (USDA Handbook No. 31, 1998 edition).

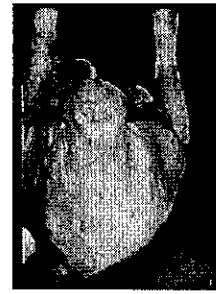
Examples of USDA Grades of Whole Carcasses



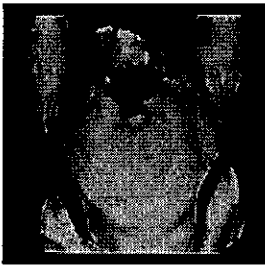
GRADE A
disregard slight discoloration
on leg



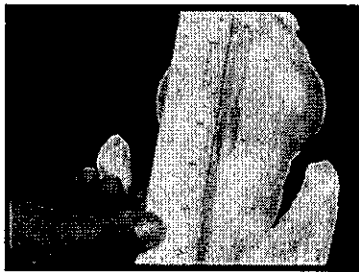
GRADE A
disregard slight discoloration on breast



GRADE A
disregard exposed flesh caused
by removal of oil (preen) gland



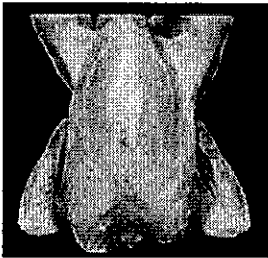
GRADE B
trimmed back not wider than base of
tail and less than halfway between
base of tail and hip joints



GRADE B
tear or cut on back exceeds
amount permitted



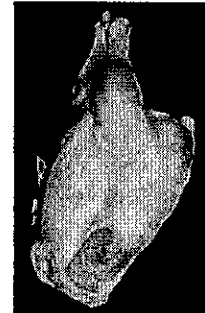
GRADE B
parts of wing removed beyond
the second joint



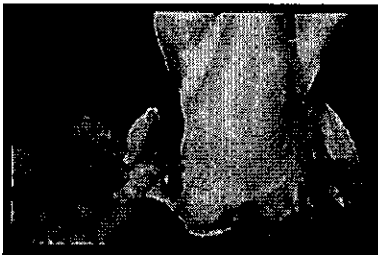
GRADE C
more than 1/3 of flesh exposed
on breast



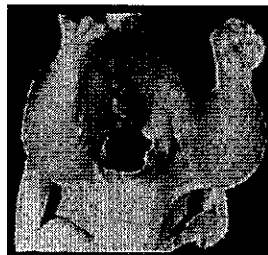
GRADE C
trimmed back not wider than base of
tail but more than halfway between
base of tail and hip joints



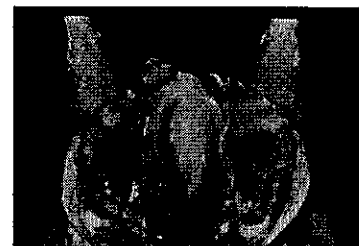
GRADE C
entire wing removed



GRADE C
protruding broken bone in wing tip

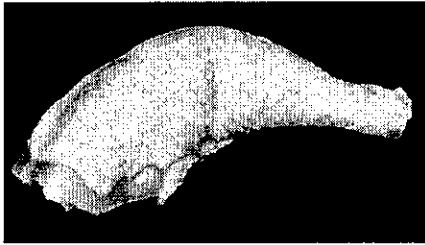


NONGRADABLE
trimming of tip of keel exceeds
amount permitted



NONGRADABLE
trimmed back exceeds amount
permitted

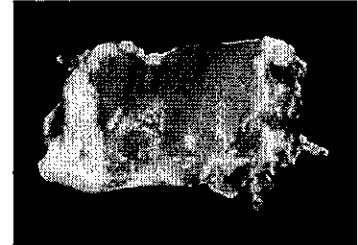
Examples of USDA Grades of Carcass Parts



GRADE A
exposed flesh on leg within limits allowed



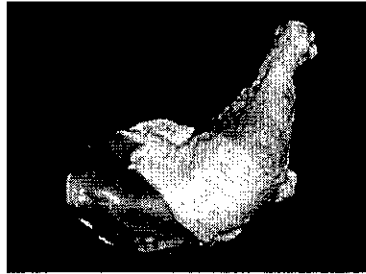
GRADE A
no defect on thigh



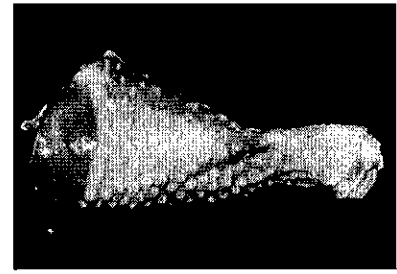
GRADE A
no defect on boneless, skinless thigh



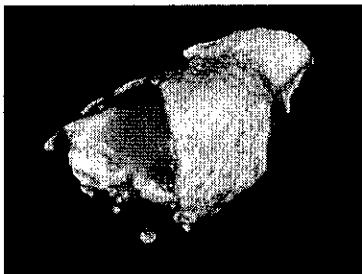
GRADE B
discoloration on thigh exceeds amount permitted



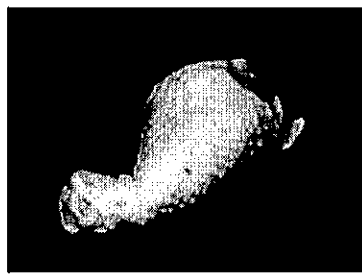
GRADE B
less than 1/3 of flesh exposed on leg



GRADE B
discoloration on drumstick exceeds amount permitted



GRADE C
more than 1/3 of flesh exposed on thigh



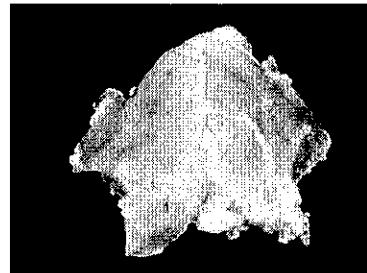
GRADE C
broken tibia on drumstick



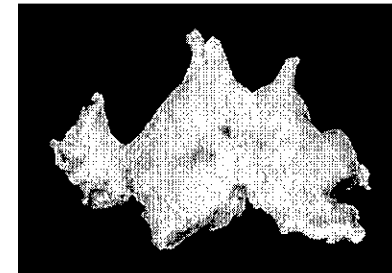
GRADE C
discoloration on thigh exceeds amount permitted



GRADE C
discoloration of drumstick exceeds amount permitted



NONGRADABLE
appreciable meat yield loss on boneless, skinless whole breast



NONGRADABLE
appreciable meat yield loss on boneless, skinless whole breast with rib meat

GRADING SHELL EGGS

Introduction

Grading shell eggs is the classification of individual eggs according to established standards. The U.S. Standards for Quality of Individual Shell Eggs uses, as its basis, egg quality factors such as the condition of white or yolk, size of air cell, and cleanness and soundness of shell.

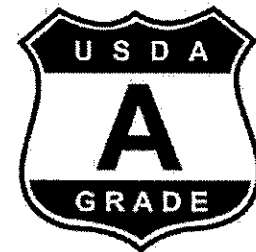
Standards may also group eggs into weight (or size) classes by specifying the minimum weight per unit, such as ounces per dozen. Although color is not a factor in the standards, eggs usually are sorted for color and sold as either “whites” or browns.”

Advantages of Grading

Grading aids orderly marketing by reducing waste, confusion, and uncertainty regarding quality values. Standards of quality satisfy needs of producers, dealers, and consumers desiring uniform measures of quality.

The principal advantage in using official standards and grades is to furnish an acceptable common language in trading and marketing the product, thus making possible –

- impartial official grading which eliminates the need for personal inspection of the eggs by sellers, buyers, and other interested persons;
- pooling of lots of comparable quality;
- development of improved quality at producer level through buying-on-grade programs;
- market price reporting in terms understood by all interested parties;
- negotiations of loans on generally accepted quality specifications;
- a basis for settling disputes involving quality;
- a basis for paying damage claims;
- a standard upon which advertising is based;
- a uniform basis for establishing brand names; and
- establishment of buying guides for consumers.



General Application

Standards of quality are a basis for establishing grades. Standards of quality apply to individual shell eggs. Grades apply to “lots” of eggs such as dozens, 30-dozen cases, and carloads. Because of instability in egg quality and subjective grading procedures, tolerances must be provided in grades for small percentages of eggs of a quality lower than those comprising the major part of the grade. Tolerances allow for errors in judgment, differences in interpretation, and normal deterioration in quality from the time of grading until the eggs are sold.

The U.S. Standards for Quality of Individual Shell Eggs serves not only as a basis for establishing grades, but also for developing state standards (and grades) and “commercial” grades. Standards and grades are permissive; that is, they are not required to be used by individual producers or handlers.

General Quality Factors

Standards of quality are a means of classifying individual eggs according to groups of conditions and characteristics wanted by consumers. Grades differ from standards. Grades provide tolerances for individual eggs within a lot to be of lower quality than the grade name indicates.

Shell egg quality factors are grouped into interior quality factors (determined by candling) and exterior quality factors (determined by external observation).

Automatic equipment and mass scanning devices have replaced manual grading of eggs by commercial producers. However, graders should have basic knowledge of internal and external quality factors that influence egg grading on the commercial scene.

The next section of this manual describes the internal quality factors of eggs as they appear before a candling light. The section that follows describes the external quality factors of eggs as they appear under direct examination.

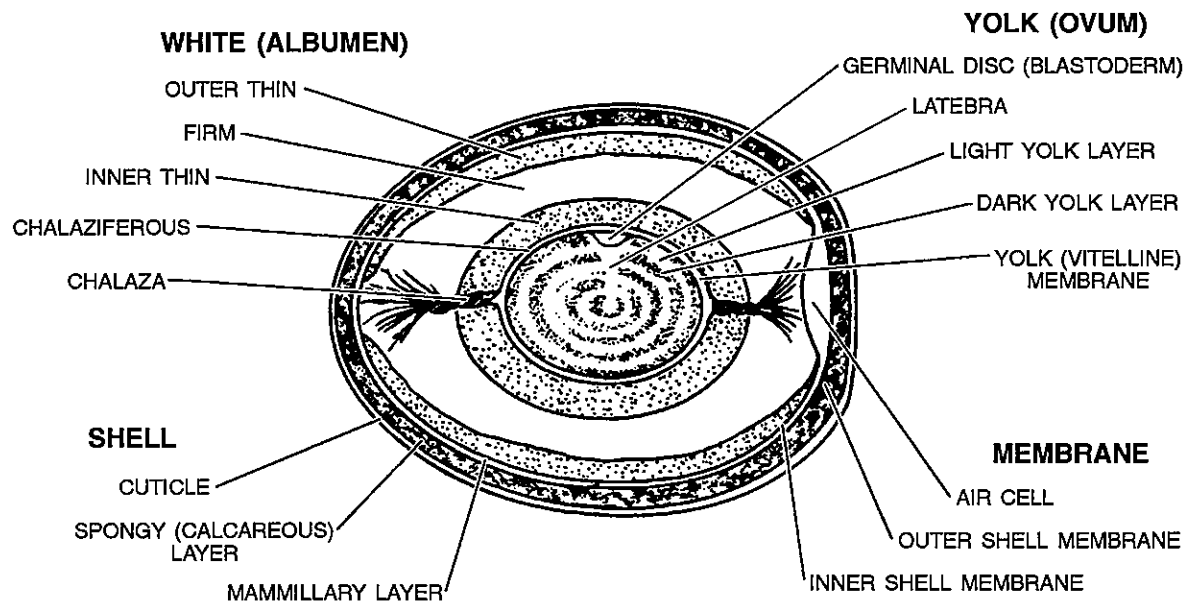
To serve as a means of achieving competency and skill in evaluating eggs, the National FFA Poultry Evaluation Career Development Event includes the following shell egg classes:

Individual Shell Eggs for Interior Quality Grading (Class 7),

Individual Shell Eggs for Exterior Quality Grading (Class 8), and

Evaluative Criteria for Class 8 (Class 9).

Knowledge of the parts of an egg will aid the participant in grading individual shell eggs.



Images and scripts relating to interior and exterior quality grading of eggs are available to supplement in the information in this manual. Refer to the REFERENCES section of this manual.

GRADING INDIVIDUAL SHELL EGGS FOR INTERIOR QUALITY

Introduction

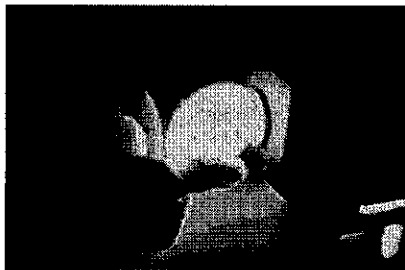
Class 7 consists of ten white (or white-tinted) shell eggs to be candled and graded for interior qualities. Interior quality factors listed in the latest edition of *U.S. Standards and Grades for Shell Eggs* are the basis for evaluation. USDA quality grades are AA, A, B, and Loss. Participants may handle the eggs for candling purposes.



Hand Candling an Egg

The following procedure is an acceptable method of hand candling an egg.

Secure an egg from the flat. Hold it firmly between the thumb and index finger with the small end of the egg resting securely against the middle finger. Quickly turn the hand and wrist in an arc of about 180° to set the contents of the egg in motion. Stop the hand and wrist motion at the end of the arc. As the egg's contents spin inside the shell, immediately place the large end of the egg against the candling aperture. (The long axis of the egg should be at approximately a 45° angle to the candling aperture. The thumb and finger should be on opposite sides of the shell to prevent obstructing the view of the egg's contents.) Observe the egg's contents as they rotate inside the shell membrane.



Proper handling of an egg during candling permits satisfactory evaluation of the egg's interior qualities and also minimizes the possibility of dropping the egg.

Interior Quality Factors

Evaluate only the interior qualities of the egg during candling. Do not consider exterior shell quality factors. Follow a systematic order in evaluating the egg's air cell, yolk, and white. Determine a final grade of either AA quality, A quality, B quality, or Loss for the egg based on the Standards of Interior Quality for Individual Shell Eggs (Candled Appearance). These standards are discussed briefly in this section.

IMPORTANT: One or more interior quality factors may influence the final grade for an egg. Assign each egg a final grade based on the factor having the lowest grade. For example, give an egg the final grade of A quality if it meets the standards for AA quality in all factors except one and is appraised an A quality in that one factor.

Air Cell

The temperature of a freshly-laid egg is near 105°F. It has no air cell, or only a small one. The air cell is normally at the large end of the egg. As the egg cools to room temperature, the liquids contract more than does the shell. This contraction causes the inner shell membrane to form the air cell. An increase in the size of the air cell beyond that resulting from the normal contraction is caused by evaporation of water from the egg. Egg age and shell texture, including temperature, humidity, and other factors influence the water evaporation rate.

The air cell is a major factor observed in candling. Depth of air cell is the only characteristic considered. Air cell movement is not reconsidered in evaluating an egg. The air cell can show unlimited movement and be free or bubbly in all qualities – AA, A, and B.

Quality	Maximum Depth of Air Cell
AA	up to 1/8 inch
A	1/8 inch to 3/16 inch
B	greater than 3/16 inch

When practicing the grading of shell eggs for interior quality, use an *Official Egg Air Cell Gauge* similar to the sample found in this section. Measure depth of air cell at the point of greatest distance between the top of the air cell and an imaginary plane passing through the egg at the lower edge of the air cell where it touches the shell.

Yolk

The yolk's appearance as the egg twirls in candling is an excellent indicator of the interior quality of the shell egg. The shadow that the yolk casts upon the shell by a candling light determines the yolk's characteristics. The yolk's appearance depends on the condition of the albumen (egg white).

Consider three yolk factors when evaluating egg quality: (1) yolk size and shape, (2) distinctness of yolk shadow outline, and (3) yolk defects and germ development.

YOLK SIZE AND SHAPE

The yolk of a freshly laid egg is round and firm. As the yolk ages, it absorbs water from the albumen and increases in size. This weakens the vitelline membrane and gives yolks a somewhat flattened shape on top and a general "out-of-round" shape.

Yolk size and shape characteristics become apparent for B quality eggs. Terms that describe yolk size and shape in the *U.S. Standards of Quality for Shell Eggs* include –

ENLARGED AND FLATTENED – the yolk membranes and tissues have weakened causing the yolk to appear definitely enlarged and flattened. **B Quality**

DISTINCTNESS OF YOLK SHADOW OUTLINE

Three factors govern the distinctness of the yolk outline or shadow outline:

Thickness & consistency of albumen – the thicker the albumen, the less distinct the outline.

Condition of the yolk – Presence or absence of blemishes showing up before the candling light as dark shadows in the yolk determines its condition.

Color of the yolk – except for off-color, yolk color is difficult to determine when candling. However, extremes in yolk color may influence the candler's judgment of egg quality. Under some conditions, a dark colored yolk casts a darker shadow at the candling light than does a lighter colored yolk.

IMPORTANT: Concentrate on the yolk outline rather than the depth of the yolk shadow to minimize the influence of yolk color on interior quality determination.

Terms that define the three degrees of distinctness of yolk shadow outlines in the *U.S. Standards of Quality for Shell Eggs* include –

OUTLINE SLIGHTLY DEFINED – The yolk outline is indistinct indicated and appears to blend into the surrounding white as the egg is twirled. **AA Quality**

OUTLINE FAIRLY WELL DEFINED – The yolk outline is discernible (observable) but not clearly outlined as the egg is twirled. **A Quality**

OUTLINE PLAINLY VISIBLE – The yolk outline is clearly visible as a dark shadow when the egg is twirled. **B Quality**

YOLK DEFECTS AND GERM DEVELOPMENT

The relative viscosity of the albumen has a direct bearing on the accurate determination of defects on the yolk before the candling light. Unless yolk defects are very prominent, detecting them is difficult when the egg has thick albumen.

Terms that describe yolk defects in the *U.S. Standards of Quality for Shell Eggs* include:

PRACTICALLY FREE FROM DEFECTS — the yolk shows no germ development but may show other very slight defects on its surface. **AA and A Qualities**

SERIOUS DEFECTS — the yolk shows well-developed spots or areas and other serious defects (such as olive yolks) that do not cause the egg to be a "Loss." **B Quality**

CLEARLY VISIBLE GERM DEVELOPMENT — Development of the germ spot on the yolk of a fertile egg has progressed to the point where it is plainly visible as a definite circular area or spot but with no blood in evidence. **B Quality**

BLOOD CAUSED BY GERM DEVELOPMENT — Blood caused by development of the germ in a fertile egg appears as definite lines or as a blood ring. **Loss**

White (Albumen)

Practically all freshly laid eggs contain four layers of albumen — chalaziferous (inner thick), inner thin, thick, and outer thin. The relative proportions of the thick and outer thin layers of albumen largely govern the appearance of the egg before the candling light. The white and the yolk are very closely associated, and a discussion of either factor should include the other.

Standards of quality include two important considerations regarding the white.

Condition of the white — the intensity of the yolk shadow and the freedom of yolk movement as the egg is twirled before the candling light determines the condition of the white.

Viscosity/Clarity of the white — thick whites allow little movement of the yolk and an indistinct shadow results. Thin whites permit free movement of the yolk and a distinct shadow results.

Using the terms defined in the *U.S. Standards of Quality for Shell Eggs*, we can describe the white albumen of different grades of eggs as follows:

CLEAR — the white is free from discoloration or foreign bodies. **AA and A Qualities**

IMPORTANT: Do not misinterpret a prominent chalaza as a foreign body (meat spot or blood clot).

FIRM — the white is thick enough to prevent the yolk outline from being more than slightly defined when the egg is twirled. **AA Quality**

REASONABLY FIRM — the white is somewhat less thick than a firm white. The white permits the yolk to approach the shell more closely and results in a fairly well-defined yolk outline when the egg is twirled. **A Quality**

WEAK AND WATERY — the white is weak, thin, and lacking in viscosity. A weak and watery white permits the yolk to approach the shell closely, thus causing the yolk outline to appear plainly visible and dark when the egg is twirled. **B Quality**

BLOOD SPOTS OR MEAT SPOTS — If the spots are small (aggregating not more than one-eighth inch in diameter), the egg is **B Quality**. If large, or showing diffusion of blood into the white surrounding a blood spot, the egg is a **Loss**. Blood spots are not caused by germ development. They may be found on the yolk or in the white. Meat spots usually are blood spots that have lost their characteristic red color or are tissue from the reproductive organs of the hen.

BLOODY WHITE — the egg has blood diffused throughout the white. Freshly laid eggs may have this condition. **Loss**

Loss Eggs

The *U.S. Standards, Grades, and Weight Classes for Shell Eggs* defines certain eggs as “loss” eggs. A “loss” egg is either inedible, cooked, frozen, contaminated, musty, or moldy, or it contains a large blood spot, large meat spot, bloody white, a green egg white, rot, stuck yolk, blood ring, embryo chick (at or beyond the blood ring state), free yolk in the white, or other foreign material. For more information about loss eggs and other qualities, see the table Summary of Specifications for Standards of Interior Quality for Individual Shell Eggs.

For further reading, refer to the REFERENCES section of this manual for Egg Grading Manual – Agriculture Handbook Number 75.

**SUMMARY OF SPECIFICATIONS FOR STANDARDS OF INTERIOR QUALITY FOR
INDIVIDUAL SHELL EGGS (CANDLED APPEARANCE) *
(Minimum Requirements and Maximum Defects Permitted)**

FACTOR	AA QUALITY	A QUALITY	B QUALITY	LOSS
SHELL ¹	Clean.	Clean.	Clean to slightly stained.	Broken with contents leaking. ²
	Unbroken.	Unbroken.	Unbroken.	
	Practically normal shape, texture, and strength.	Practically normal shape, texture, and strength.	Abnormal shape, texture, and strength.	
AIR CELL	1/8 inch or less in depth.	More than 1/8 inch but not more than 3/16 inch in depth.	More than 3/16 inch in depth.	
	Unlimited movement. Free or bubbly.	Unlimited movement. Free or bubbly.	Unlimited movement. Free or bubbly.	
YOLK	Outline slightly defined. Practically free from defects.	Outline fairly well defined. Practically free from defects.	Enlarged and flattened. Outline plainly visible. Serious defects and clearly visible germ development.	Loss egg characteristics ³
WHITE	Firm. Clear. Free from defects.	Reasonable firm. Clear. Free from defects.	Weak and watery. Small blood or meat spots (total aggregate area not more than 1/8 inch in diameter).	Bloody. Blood or meat spots (total aggregate area more than 1/8 inch in diameter). Loss egg characteristics ³

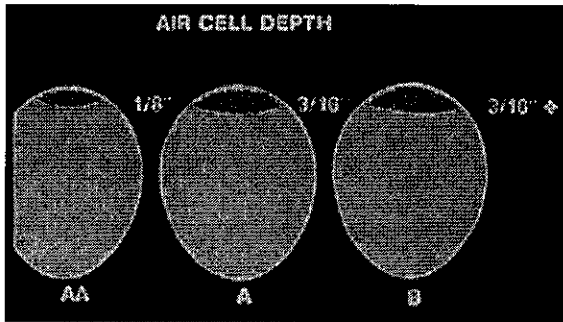
¹ Do not consider exterior shell quality factors when grading eggs for interior quality.

² Standards of quality provide three additional egg qualities — Dirty (but unbroken), Check (contents not leaking), and Leaker (contents leaking).

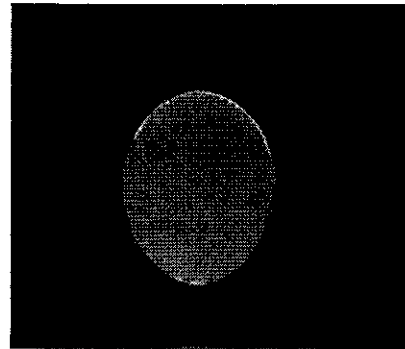
³ Inedible, cooked, frozen, contaminated, musty, or moldy; also contains large blood spot, large meat spot, bloody white, green white, rot, stuck yolk, embryo chick (at or beyond blood ring stage), free yolk in the white, or other foreign material.

* Adapted from *Egg-Grading Manual – Agriculture Handbook Number 75*, USDA, Washington, DC.

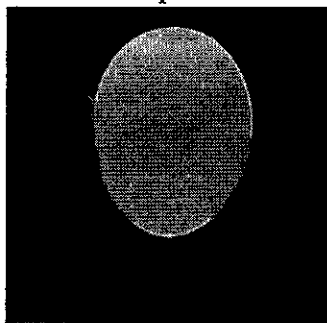
Examples of Interior Qualities of Eggs



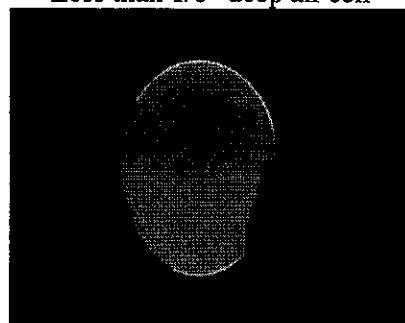
USDA grades of eggs for indicated air cell depths



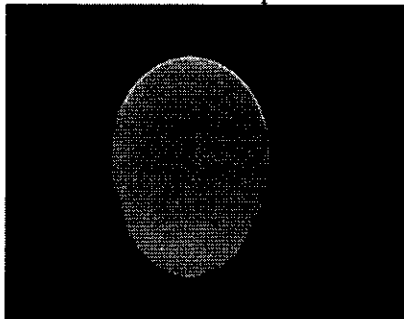
GRADE AA
Less than 1/8" deep air cell



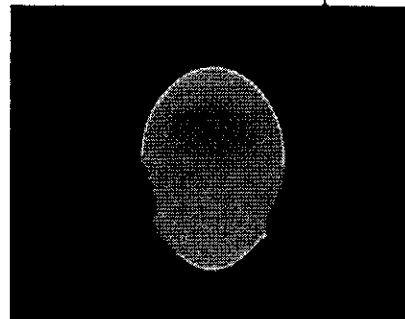
GRADE AA
less than 1/8" deep air cell



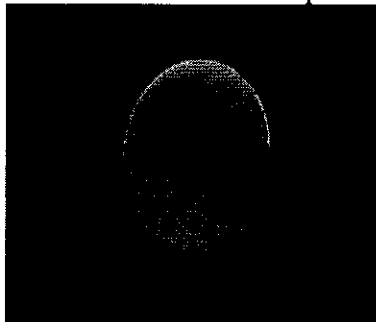
GRADE A
between 1/8" and 3/16" deep air cell



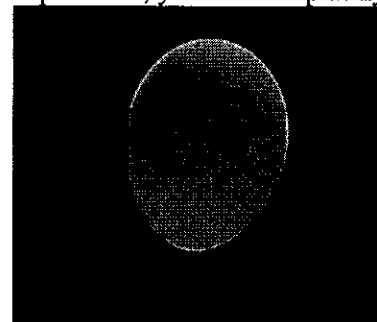
GRADE A
between 1/8" and 3/16" deep air cell



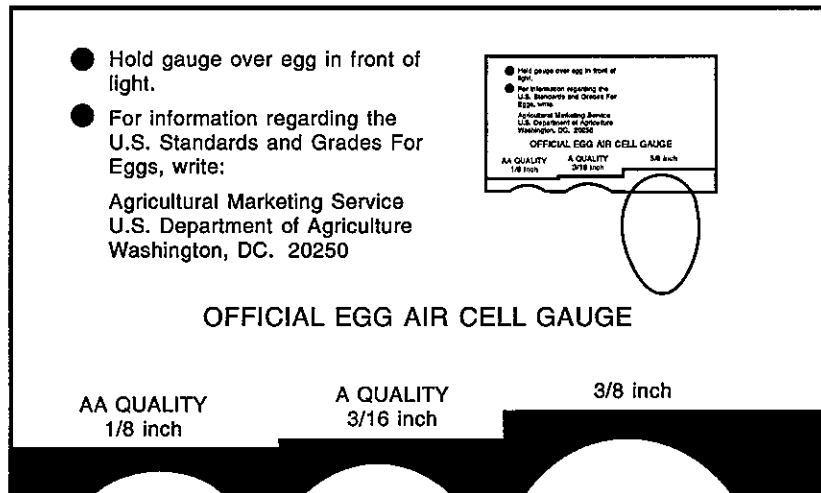
GRADE B.
3/16" deep air cell; yolk outline plainly visible



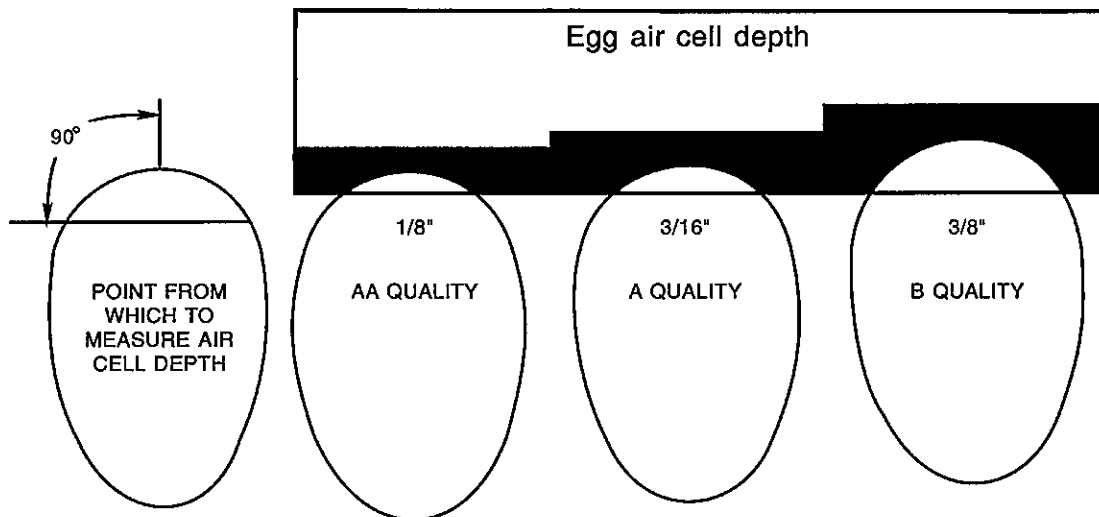
LOSS
blood spots aggregating to more than 1/8" in diameter



LOSS
large blood spot



MEASURING AIR CELL DEPTH



GRADING INDIVIDUAL SHELL EGGS FOR EXTERIOR QUALITY

Introduction

Class 8 consists of fifteen chicken eggs to be graded for exterior qualities. Egg shell factors listed in the latest edition of *U.S. Standards and Grades for Shell Eggs* are the basis for evaluation. Exterior quality grades used in the event will be AA/A, B, and NG (nongradable). Eggs will be placed horizontally on flats or cartons, and only the visible portion of each egg is to be evaluated. The participant is not permitted to touch the eggs or the flats/cartons holding the eggs.



Class 9 is the evaluative criteria for the exterior quality grading class (Class 8). The exterior quality factors discussed in this section will be used to determine the grade of each egg in Class 8.

EXTERIOR QUALITY FACTORS

Follow a systematic order in evaluating soundness, cleanness, shape, texture, and thickness of an egg shell. Determine a final grade of either AA/A quality, B quality, or NG (nongradable) for the egg based on the *Standards of Exterior Quality for Individual Shell Eggs*. These standards are discussed briefly in this section. For further reading, refer to the REFERENCES section of this manual for *Egg-Grading Manual – Agriculture Handbook Number 75*.

IMPORTANT: One or more exterior quality factors may influence the final grade of an egg. For Class 8, assign each egg a final grade based on the factor having the lowest grade. For example, give an egg a final grade of B quality if it meets the standards for AA/A quality in all factors except two and is appraised a B quality for each of those two factors. Then, for Class 9, designate those two factors.

Soundness

The shell of an egg may be unbroken, or it may be cracked.

Terms that define egg shell soundness include —

NO DEFECT An egg shell that is unbroken. **AA/A Quality** **B Quality**

CHECK — An egg shell that has a fine, hair-like crack. The shell membranes are intact, and the egg contents do not leak. [The shell strength of a check is diminished.] **NG (nongradable)**

DENTED CHECK — An egg shell that has a dented crack. The shell membranes are intact, and the egg contents do not leak. [The shell of a dented check has diminished strength.] **NG (nongradable)**

LEAKER — An egg shell that is cracked with broken membranes allowing the egg contents to leak or be free to leak. [The shell of a leaker is diminished in strength.] **NG (nongradable)**

Cleanness

The shell of an egg may be clean, or it may be stained or contain adhering dirt and foreign material.

Terms that define egg shell cleanness include —

NO DEFECT. An egg shell that is clean or free of stains (permanent discolorations) and adhering (sticking, clinging) material. [A shell showing traces of processing oil is clean, unless the oil is soiled.] **AA/A Quality**

SLIGHT/MODERATE STAIN. An egg shell that has localized stains covering less than 1/32 of the shell or scattered stains covering less than 1/16 of the shell. [A slight stain detracts from the appearance of the egg but not as much as a prominent stain.] **B Quality**

PROMINENT STAIN.....localized stains covering more than 1/32 of the shell or scattered stains covering more than 1/16 of the shell. [A prominent stain significantly detracts from the appearance of the egg.] **NG (nongradable)**

ADHERING DIRT OR FOREIGN MATERIAL. An egg shell that has dirt or foreign matter (such as blood, yolk, albumen, and fecal material) sticking to the shell. [Adhering material one millimeter or greater in area significantly detracts from the appearance of the egg. **NG (nongradable)**

The following may help visualize surface area dimensions of an egg shell.

Total surface area of a normal 2-ounce egg = 10 1/2 square inches.

1/32 of shell surface area measures approximately 9/16" x 9/16".

1/16 of shell surface area measures approximately 13/16" x 13/16".

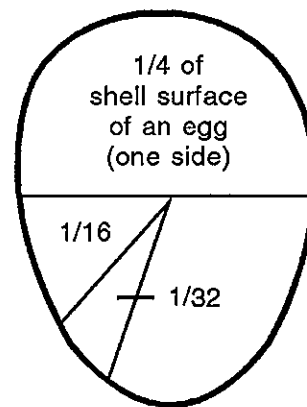
1/4 of shell surface area measures approximately 1 9/16" x 1 9/16".

Shape

The shell of an egg may be normal or approximately normal in shape, or it may be abnormal in shape.

Terms that define egg shell shape include —

NO DEFECT. An egg shell that is normal or practically normal in shape. The ideal egg is oval in shape, with one end larger than the other. The large end (air cell end) tapers toward the smaller end. **AA/A Quality**



DECIDEDLY MISSHAPEN — An egg shell that is irregular or unusual in shape and affecting a substantial amount of shell surface. The shell deviates from the normal by being round, long, pointed, or distorted. [A decidedly misshapen shell is faulty in soundness/strength, and it detracts from the appearance of the egg.] **B Quality**

IMPORTANT: Egg shell shape abnormalities associated with ridges, calcium deposits, or rough surfaces and bulges caused by body checks, thin spots, or cracked shells should not be designated as decidedly misshapen.

Texture

The shell of an egg may be sound and strong in texture, or it may be faulty in soundness/strength, containing rough areas of calcium deposits, body checks, or pronounced ridges.

Terms that define egg shell texture include —

NO DEFECT. An egg shell that is sound and strong, with few to no calcium deposits, no body checks, and slight to no ridging. **AA/A Quality**

FAULTY SOUNDNESS/STRENGTH — An egg shell that is weaker than a normal egg shell. [Faulty soundness or strength lowers the utility value of the egg and detracts from the appearance of the egg.] **B Quality**

IMPORTANT: An egg designated as decidedly misshapen, calcium deposits, body check, pronounced ridges, pronounced thin spots, check, dented check, or leaker IS ALSO to be designated as faulty soundness/strength.

CALCIUM DEPOSITS — An egg shell that has rough areas of calcium deposits. [A few small calcium deposits do not diminish an egg's strength, but rough areas of calcium deposits decrease shell soundness/strength and also detract from the appearance of the egg.] **B Quality**

BODY CHECK — An egg shell that cracked inside the hen's body and then was repaired by additional calcium deposited over the cracked area, resulting in a ridged area. [A body check decreases shell soundness/strength and detracts from the appearance of the egg.] **B Quality**

IMPORTANT: A "body check" should not be designated as having pronounced thin spots or for being decidedly misshapen when resulting from (or caused by) the body check.

PRONOUNCED RIDGES — An egg shell that has definite ridges affecting its shape. [Pronounced ridges decrease shell soundness/strength and detract from the appearance of the egg.] **B Quality**

Thickness

The shell of an egg may be uniform in thickness, or it may contain pronounced thin spots that contribute to breakage of the egg.

Terms that define egg shell thickness include —

NO DEFECT. An egg shell that is free or practically free of thin spots. **AA/A Quality**

PRONOUNCED THIN SPOTS — An egg shell that has definite thin areas. [Pronounced thin spots diminish shell soundness/strength and detract from the appearance of the egg.] **B Quality**

**SUMMARY OF SPECIFICATIONS FOR STANDARDS OF
EXTERIOR QUALITY FOR INDIVIDUAL SHELL EGGS *
(Minimum Requirements and Maximum Defects Permitted)**

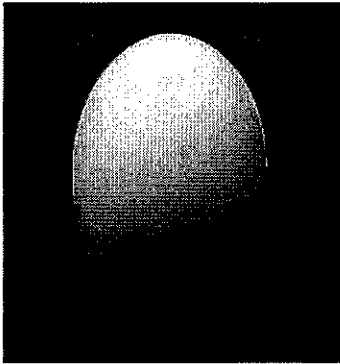
SHELL FACTOR	AA/A QUALITY	B QUALITY	NONGRADABLE
SOUNDNESS	Unbroken.	Unbroken.	Check – fine, hair-like crack with membranes intact and egg contents not leaking. Dented check – dented crack with membrane intact and egg contents not leaking. Leaker – broken membrane with contents leaking or free to leak.
CLEANNESS	Clean or free of stains and adhering material. Traces of unsoiled processing oil.	Slight/Moderate stain. If localized, covering less than 1/32 of the shell. If scattered, covering less than 1/16 of the shell.	Prominent stain. If localized, covering more than 1/32 of the shell. If scattered, covering more than 1/16 of the shell. Adhering dirt or foreign material (one mm or greater in area).
SHAPE	Normal or practically normal.	Decidedly misshapen. ¹ Irregular or unusual (round, long, pointed, or distorted).	
TEXTURE	Sound and strong. Few to no calcium deposits. No body checks. Slight to no ridging.	Faulty soundness or strength. Weak. Rough areas of calcium deposits. Body check. ² Pronounced ridges.	
THICKNESS	Free or practically free of thin spots.	Pronounced thin spots.	

¹ Egg shell shape abnormalities associated with ridges, calcium deposits, or rough surfaces and bulges caused by body checks, thin spots, or cracked shells should not be designated as decidedly misshapen.

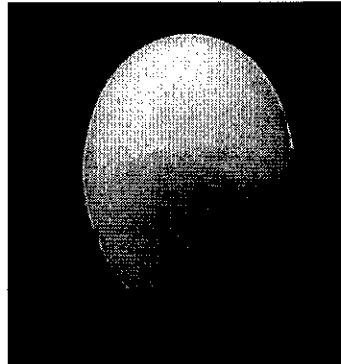
² A "body check" should not be designated as having pronounced thin spots or for being decidedly misshapen when resulting from (or caused by) the body check.

* Adapted from *Egg-Grading Manual – Agriculture Handbook Number 75*, USDA, Washington, DC.

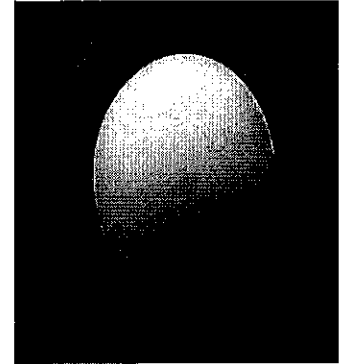
**Examples of Exterior Qualities of Eggs
(Quality grade is listed in parenthesis.)**



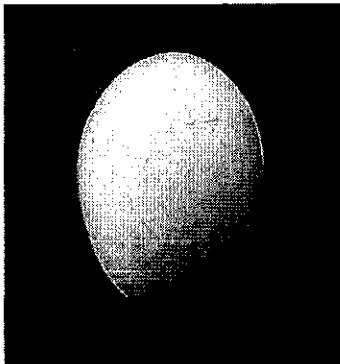
No defect. (AAA)



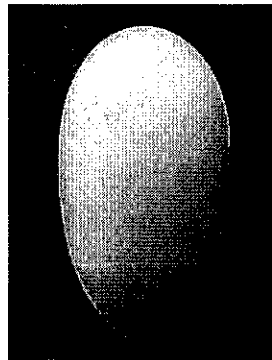
Body check. (B)



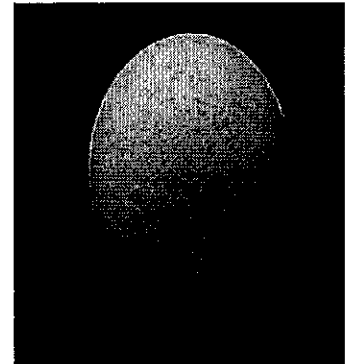
Slight/Moderate stain. (B)



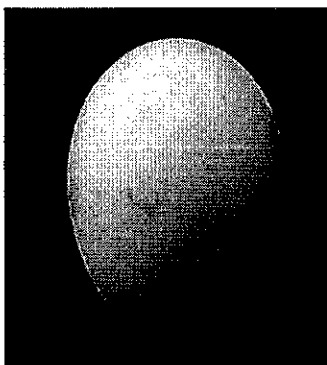
Check. (NG)



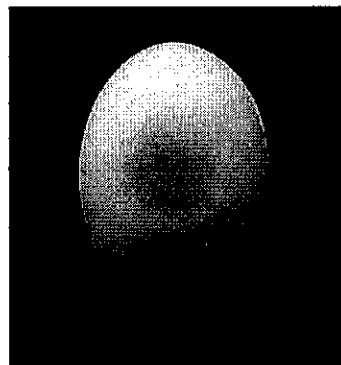
Decidedly
misshapen. (B)



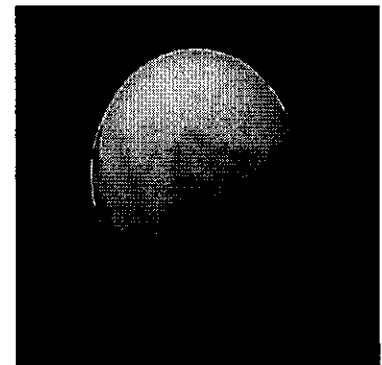
Rough areas of
calcium deposits. (B)



Prominent stain. (NG)



Pronounced thin spot. (B)



Pronounced ridges. (B)

* Photographs are courtesy of Instructional Materials Service, Texas A&M University.

EVALUATING FURTHER-PROCESSED POULTRY MEAT PRODUCTS *

INTRODUCTION

Poultry industry companies are responsible for providing safe and acceptable products to their customers, which range from individuals to restaurants and retail outlets. During processing, birds and raw products are inspected by the USDA to ensure wholesomeness. Many raw products are further-processed into a wide variety of value – added products, including chicken patties, nuggets, tenders, wings, and drumettes. The plant conditions in which these products are made are monitored by the USDA for cleanliness and safety. It is the poultry company's responsibility to ensure that its value-added products are safe and relatively free of defects.

Class 10 is an evaluative criteria class of 10 samples of three types of boneless precooked products: coated chicken meat patties, tenders, and nuggets. A sample is defined as a plate containing one or more of the same type of product. The class will contain 10 samples that may represent and combination of the three types of boneless precooked products. For example a class may contain three samples of nuggets, three samples of patties and four samples of tenders. Each sample will be evaluated individually and not compared with any other sample in the class. Evaluate product quality using the written factors discussed in this section. Participants are not permitted to touch any product sample.

Class 11 is an evaluative criteria class of 10 samples of types of bone-in precooked product such as drums, thighs, wings, etc. A sample is defined as a plate containing one or more of the same type of product. The class will contain 10 samples that may represent any combination of the types of bone-in precooked products. For example, a class may contain three samples of drums, three samples of thighs and four samples of wings. Each sample will be evaluated individually and not compared with any other sample in the class. Evaluate product quality using the written factors discussed in this section. Participants are not permitted to touch any product sample.

The "Summary of Written Quality Factors Used to Evaluate Further - Processed Poultry Meat Products" lists possible defects that may be found in patties, tenders, nuggets, or bone-in products used in these classes. The participant will designate one or more defects (critical, major, and minor) or "no defect" to substantiate placing each product in Class 10 and Class 11. Scorecard samples for classes 10 and 11 are found at the end of this section.

DEFINITION OF A FURTHER-PROCESSED POULTRY MEAT PRODUCT

Numerous categories encompass further-processed products. Patties consist of meat that has been chopped or ground and formed. Nuggets and tenders may have been chopped or ground and formed, or may be comprised of solid muscle (whole or chunks). Although 'tenders' refer to products made from any portion of the breast meat, for this class 'tenders' may also refer to products such as chicken fingers and chicken strips. Most commonly, patties, nuggets and



tenders (chicken fingers and strips) consist primarily of white meat, but there are categories of these products that contain all or mostly dark meat.

The meat portion of a patty or nugget contains chicken breast meat and natural proportion skin that is chopped or ground and formed by machine. USDA allows natural proportion skin to comprise up to 18% of the combined meat and skin weight. A tender is any portion of the breast meat. Spices and other food additives may be added or mixed with the meat portion, as limited by food laws, to enhance flavor or improve texture.

The coating on the patty, tender, or nugget is a flour-based batter and/or breading that is limited to 30% of the finished product weight by USDA regulations.

Boneless products such as patties, nuggets, and tenders, and bone-in products such as drumsticks, thighs, etc. are cooked in vegetable oil (corn, cottonseed, soybean, or a blend) to establish the coating color. The USDA requires poultry products labeled as “fully cooked” to be processed at a minimum internal meat temperature of 160 degrees Fahrenheit.

EVALUATIVE CRITERIA

Exterior/interior qualities and overall visual appeal govern evaluation of further-processed poultry meat products. The evaluative criteria described herein are representative of those standards used by poultry companies in evaluating the wholesomeness and consumer acceptability of their products.

Five categories of quality characteristics are used to evaluate bone-in and boneless products: coating coverage, coating color, shape/size, completeness, and foreign material. The photographs at the end of this section are representative of most of the evaluative criteria.

Coating Coverage

The thickness and adhesiveness of the external coating on the product are important. Coating should cover essentially 100% of the surface area with uniform texture and appearance. Because the participant cannot handle the product, only that portion of the product that is clearly visible should be evaluated.

Defects in coating coverage on boneless products are not additive, either on a single piece of product or across all products displayed on a sample plate. Rather, a true coating defect must be a continuous void that exceeds the allowable limit in length and/or diameter (refer to the table in this section). For example, a sample containing five nuggets, each of which has a 0.10 coating void, would be acceptable.

Defects in coating coverage of bone-in pieces are not additive across all pieces displayed as a single sample, but are additive on a single piece. For example, a bone-in piece containing two separate coating voids each measuring 0.08 inches in length would be classified as having a coating coverage defect.

Coating Color

The color of the external coating (breadding or glazing) on the product should be evaluated. Coating should be appealing to the consumer, whether as a golden-brown breadding or a nicely-colored glazing. Although subtle differences in coating color are expected, uniformity is important. An individual product piece should have a uniform color, and all product pieces on the same sample plate should be uniform. Presence of black or burned areas (crumb size or larger) constitutes a coating color defect.

Shape and Size

The shapes and sizes of patties, nuggets, and tenders should be evaluated. There are many acceptable shapes and sizes for further-processed poultry products. Although subtle differences are expected, uniformity is the most important factor in evaluating shape and size. Substantial differences in the shapes and sizes of products displayed by a sample are considered a defect.

Malformations, such as folded products, should be marked as shape defects for boneless places. Also, a sample should be marked as a size defect if it contains one or more normally-shaped pieces that are substantially larger or smaller than the majority of pieces displayed in the sample.

Completeness

The completeness of the product should be evaluated. Boneless pieces may be broken, either incompletely (a break or tear in a product is clearly visible) or completely (the product is broken apart). If a complete break is apparent, the participant should select the "broken" (not "size") defect.

Coating breaks on bone-in pieces which may not include meat are acceptable. However, if a bone-in piece contains a broken bone, the "broken" defect should be marked by the participant.

During the freezing or cooking process, two or more boneless or bone-in products may be joined together. This defect is referred to as a "cluster / marriage." If this defect is present, the product still should be evaluated for the other criteria. The presence of a cluster / marriage should be readily apparent. The participant should be cautious when evaluating pieces that may simply be next to each other or overlapping slightly.

Wing products are also evaluated for miscuts, which refers to several types of defects. The presence of a "wing tip" denotes a miscut. Drumettes and wing portions that have been separated with cuts that are not through a joint (that is, the cut has been made through bone) also are miscuts. If an excessive amount of bone is visible on any bone-in piece which may be caused by missing meat, the product is considered a miscut.

Bone-in products will be evaluated as miscuts when an excessive amount of meat is removed from a piece.

The type of bone-in products displayed as a sample will be consistent. If a sample contains a

combination of separate drumettes and wing portions, the presence of a piece in which the drumette and wing portion are attached would constitute a miscut. Similarly, if a sample contains pieces in which the drumette and wing portion are attached, the presence of individual drumettes and wing portions constitute a miscut (rather than a size defect). Also, the miscut defect applies when an excessive piece of breast meat (>1 inch) is present on a drumette but is not present on all drumettes in the sample.

Foreign Material

Bone-in and boneless products should be evaluated for the presence of clearly visible foreign material. Non-food items (such as hair, feathers, and metal, and items such as bone fragments) are considered foreign material defects in all products.

Summary of Written Quality Factors for Evaluation of Further-Processed Poultry Meat Products				
	Defects for Product Types			
Quality factor	Patties	Nuggets	Tenders	Bone-In
Coating Coverage	> 0.5” void (continuous area: not additive on a single piece or across pieces)	> 0.25” void (continuous are: not additive on a single piece or across pieces)	> 0.25” void (continuous are: not additive on a single piece or across pieces)	> 1.0” void (continuous area) >1.5” total void (additive on a single piece)
Coating Color	Inconsistent color; black or burned area (crumb size or larger)	Inconsistent color; black or burned area (crumb size or larger)	Inconsistent color; black or burned area (crumb size or larger)	Inconsistent color; black or burned area (crumb size or larger)
Shape / Size	Inconsistent shape or size; malformed ²	Inconsistent shape or size; malformed ²	Inconsistent shape or size; malformed ²	N/A ³
Completeness	Broken; cluster/marriage ²	Broken; cluster/marriage ²	Broken; cluster/marriage ²	Broken ⁴ ; miscut ² ; cluster/marriage ²
Foreign Material	Bone fragment; non-food item	Bone fragment; non-food item	Bone fragment; non-food item	Non-food item

¹ The product is designated “No Defect” if it meets minimum standards for all quality factors.
² Described in the text of this section.
³ NA = not applicable
⁴ A bone-in piece containing one or more broken bones is to be identified as a “Broken” defect.

Examples of Scorecards for Classes 10 and 11

Boneless Further Processed Poultry Meat Products Class 10

Defect	Class 10 Product Number									
	1	2	3	4	5	6	7	8	9	10
Coating Void										
Inconsistent Color										
Inconsistent Shape/Size										
Broken/Incomplete										
Cluster/Marriages										
Foreign Material										
No Defect										

Bone-In Further Processed Poultry Meat Products Class 11

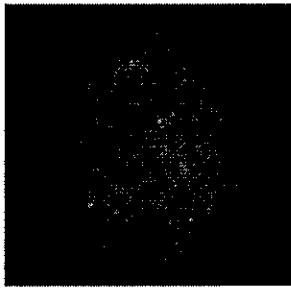
Defect	Class 11 Product Number									
	1	2	3	4	5	6	7	8	9	10
Coating Void										
Inconsistent Color										
Inconsistent Size										
Broken/Broken Bone										
Miscut										
Mixed Products										
Foreign Material										
No Defect										

Photographs of further processed poultry meat products on the following pages are courtesy of the Center for Excellence for Poultry Science, University of Arkansas, Fayetteville, Arkansas.

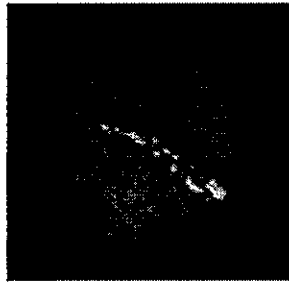
A PowerPoint presentation entitled Evaluation of Further-Processed Poultry Meat Products is available that describes the factors used in evaluating precooked, breaded chicken patties, tenders, and nuggets. Refer to the REFERENCES section in the APPENDICES for the source of the presentation.

** Dr. David Andrews, Emeritus Professor of Poultry Production, Dale Bumpurs College of Agricultural, Food & Life Sciences, University of Arkansas, and Dr. Jerry L. Wooley, Emeritus Poultry Specialist, Arkansas Cooperative Extension, reviewed and edited this topic's information.*

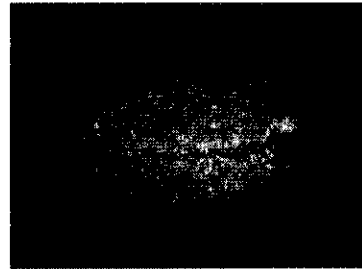
Examples of Precooked, Coated Chicken Patties



No Defect



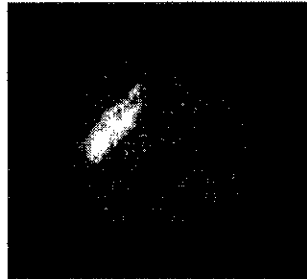
Broken



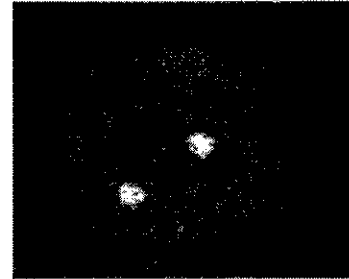
Cluster / Marriage



Inconsistent Coating Color
(burned crumbs)

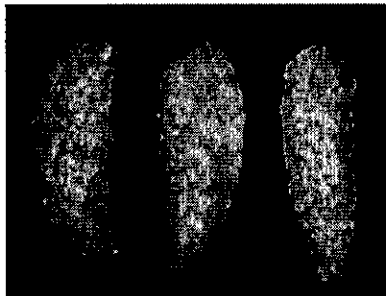


Coating Void
(> 0.5inch void)

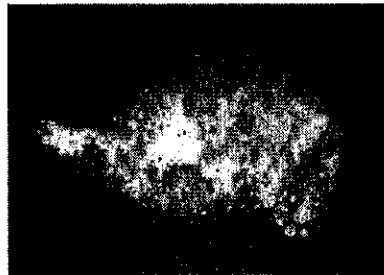


No Defect
(each coating void < 0.5 inch
and not additive)

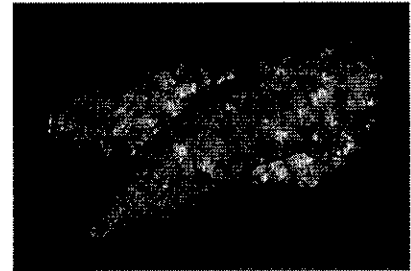
Examples of Precooked, Coated Chicken Tenders



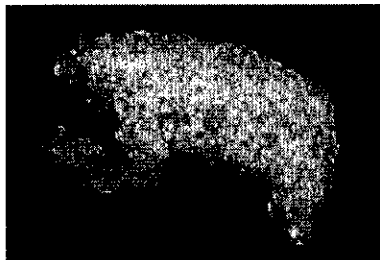
No Defect



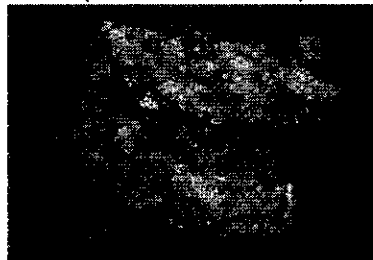
Coating Void
(> 0.25 inch void)



Cluster / Marriage



Inconsistent Shape
(unless all tenders displayed
are of similar shape)



Inconsistent Shape
(unless all tenders displayed
are of similar shape)

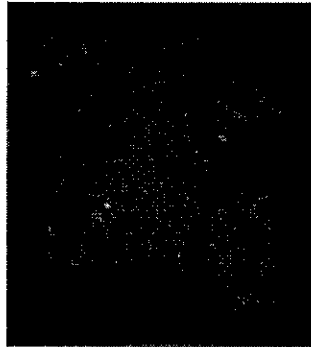


Inconsistent Shape

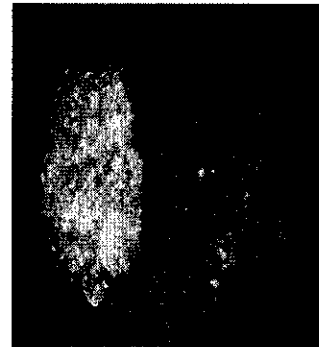
Examples of Precooked, Coated Chicken Nuggets



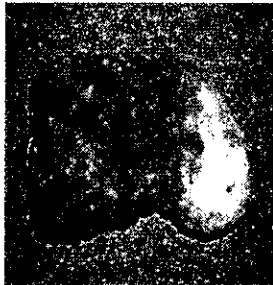
No Defect



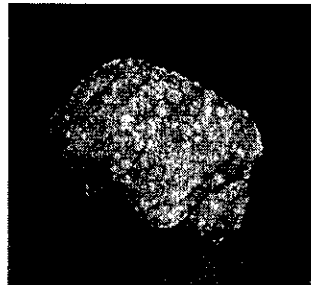
Inconsistent Size



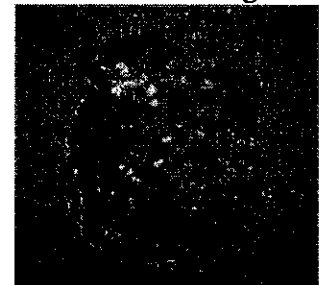
Inconsistent Coating Color



Coating Void
(> 0.25 inch void)



Cluster / Marriage

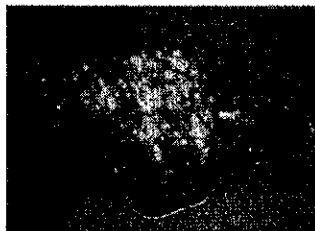


Inconsistent Shape
(unless all nuggets displayed
are of similar shape)

Examples of Precooked, Coated Chicken Wings



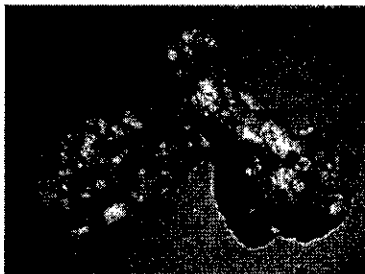
Drumettes – No Defect



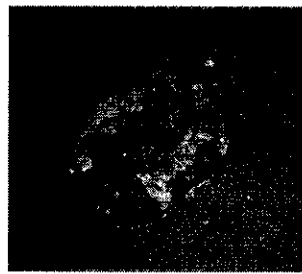
Drumettes – Miscut Wing
(portion of meat missing)



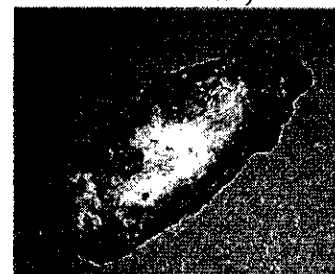
Wing Portion – Miscut Wing
(includes wing tip and portion
of drumette)



Drumettes –
Cluster / Marriage



Wing Portion – Coating Void
(> 1.5 inches additive void)

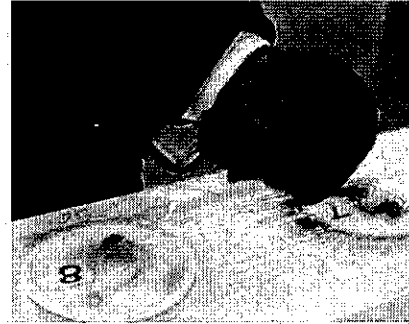


Wing Portion – Coating Void
(> 1 inch continuous)

IDENTIFYING CHICKEN CARCASS PARTS

Consumer purchases of chicken parts indicate preferences for specific cuts of the carcass. Some consumers prefer white meat, and others prefer dark meat. Therefore, a retail market exists for special poultry cuts (for example, breast packs, fillets, and whole leg packs).

Because of the popularity of retail cuts of poultry, the Poultry Evaluation Career Development Event includes a class of chicken carcass parts for identification.



Class 12 is an identification class. Ten chicken carcass parts will be displayed under plastic or kept moist. Participants are not permitted to touch the parts.

Event officials will randomly select the ten parts from those used in the chicken processing and merchandising industries. Each of the thirty parts are described as follows:

- **HALF** is prepared by splitting the back and breast along the entire length of the whole carcass to produce approximately equal right and left halves. Each half must contain a portion of the backbone.
- **FRONT HALF** includes the full breast with corresponding back portion. It may include the wings.
- **REAR HALF** includes both legs with corresponding back portion.
- **WHOLE BREAST WITH RIBS** is separated from the back at the junction of the vertebral ribs and back.
- **BONELESS, SKINLESS WHOLE BREAST WITH RIB MEAT** is a “whole breast with ribs” with all bone, skin, tendons, cartilage, gristle, blood clots, and discolorations removed. Rib meat is attached. Neck fat is not included.
- **WHOLE BREAST** is separated from the back at the shoulder joint with the cut running rearward and downward from that point and along the junction of the vertebral and sternal ribs. The ribs are removed from the breast.
- **BONELESS, SKINLESS WHOLE BREAST** is a “whole breast” with all bone, skin, tendons, cartilage, gristle, blood clots, and discolorations removed. Rib meat is not attached. Neck fat is not included.
- **SPLIT BREAST WITH RIBS** is prepared by splitting the “whole breast with ribs” along the breastbone to make two equal parts.
- **BONELESS, SKINLESS SPLIT BREAST WITH RIB MEAT** is a “split breast with ribs” with all bone, skin, tendons, cartilage, gristle, blood clots, and discolorations removed. Rib meat is attached. Neck fat is not included.
- **SPLIT BREAST** is prepared by splitting the “whole breast” along the breastbone to make two equal parts. The wishbone portion may be removed before splitting the breastbone.

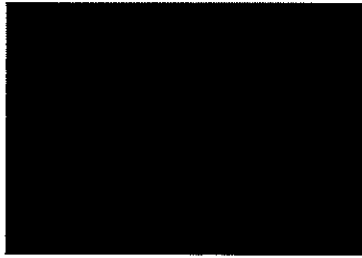
- **BONELESS, SKINLESS SPLIT BREAST** is a “split breast” with all bone, skin, tendons, cartilage, gristle, blood clots, and discolorations removed. Neck fat is not included.
- **BREAST QUARTER** consists of a breast half with a wing and a portion of the back.
- **BREAST QUARTER WITHOUT WING** consists of a front quarter of the carcass from which the wing has been removed.
- **TENDERLOIN** is the inner pectoral muscle (pectoralis minor, underlying the pectoralis major) along the breastbone. It is a boneless, skinless portion of white meat. Tendons may be present.
- **WISHBONE** (with its muscle covering and skin tissue) is severed from the breast approximately half way between the end of the wishbone (hypocledium) and from the point of the breastbone (cranial process of the sternal crest) to a point where the wishbone joins the shoulder. Neck skin is not included.
- **LEG QUARTER** consists of a thigh, a drumstick, and a portion of the back. It may include abdominal fat and a maximum of two ribs.
- **LEG** includes the whole leg (thigh and drumstick, either jointed or disjointed). Back skin is not included.
- **THIGH WITH BACK PORTION** consists of a thigh with a portion of the back.
- **THIGH** is disjointed and separated from the carcass at the hip joint and knee joint. It may include the pelvic meat but no pelvic and rib bones. It may include abdominal meat (flank meat). Back skin is not included.
- **BONELESS, SKINLESS THIGH** is a “thigh” with all bone, cartilage, gristle, and skin removed. It may include the pelvic meat.
- **DRUMSTICK** is separated from the thigh and shank by cutting through the knee joint (femorotibial and patella joint) and the hock joint (tarsal joint).
- **BONELESS, SKINLESS DRUM** is a “drumstick” with all bone, cartilage, gristle, and skin removed.
- **WING** includes, as a minimum, the humerus (first portion of wing) and the radius and ulna (middle portion of wing) with all muscle and skin tissue intact. The wing tip (phalanges) may be removed.
- **DRUMETTE** consists of the humerus (first portion of wing) with muscle and skin tissue intact.
- **WING PORTION** is separated from the “drumette” and “wing tip.” It consists of the radius and ulna (middle portion of wing) with all muscle and skin tissue intact.
- **LIVER** is severed from the viscera of the bird.
- **GIZZARD** is severed from the viscera and prepared by making a cross-sectional cut one-half way through the gizzard and then spreading the gizzard open to remove its feed contents.
- **HEART** is severed from the viscera of the bird.
- **NECK** is severed from the carcass by cutting through the cervical vertebrae nearest the point of the shoulder.

- **PAWS** are severed from the carcass by cutting through each leg near the metatarsal spur. The lower shank, foot, and toes (with or without toenails) are included.

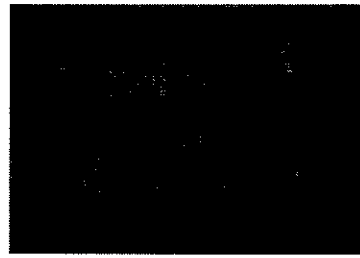
The photographs of the chicken carcass parts on the following pages were provided by the National FFA Poultry Career Development Event committee in cooperation with the Center of Excellence for Poultry Science, University of Arkansas, Fayetteville, Arkansas.

A PowerPoint presentation entitled Identifying Chicken Carcass Parts is a valuable aid for learning to recognize the 30 different parts of a chicken carcass. Refer to the REFERENCES in the APPENDICES for the source of the presentation.

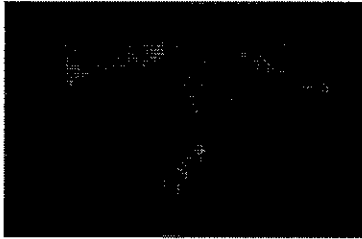
Chicken Carcass Parts Identification



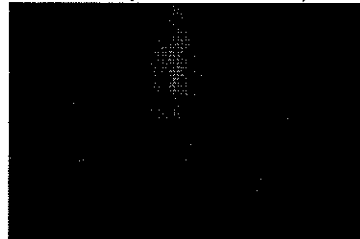
Half (external view)



Half (internal view)



Front half (dorsal view)



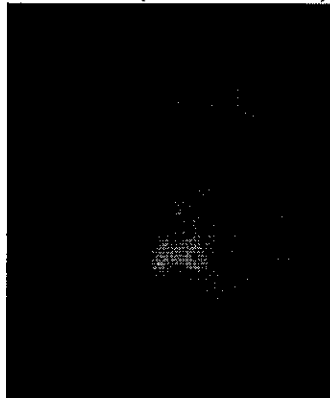
Front half (ventral view)



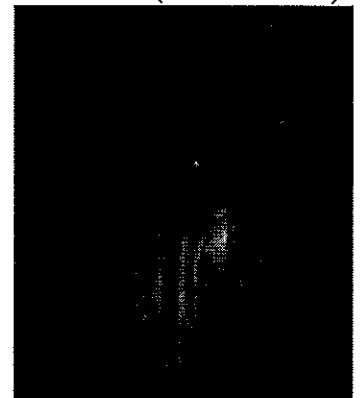
Rear half (external view)



Rear half (internal view)



Whole breast with ribs (external view)



Whole breast with ribs (internal view)



Boneless, skinless whole breast with rib meat
(external view)



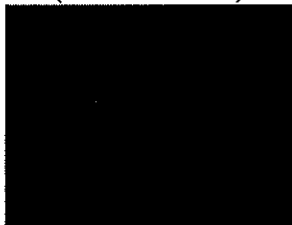
Boneless, skinless whole breast with rib meat
(internal view)



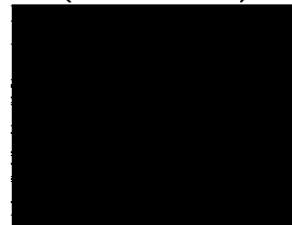
Whole breast
(external view)



Whole breast
(internal view)



Boneless, skinless, whole breast
(external view)



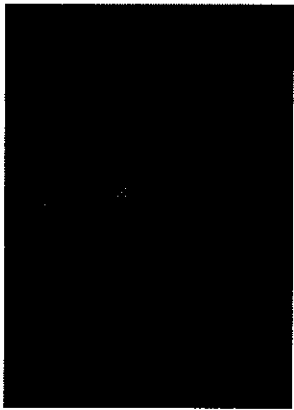
Boneless, skinless, whole breast
(internal view)



Split breast with ribs
(external view)



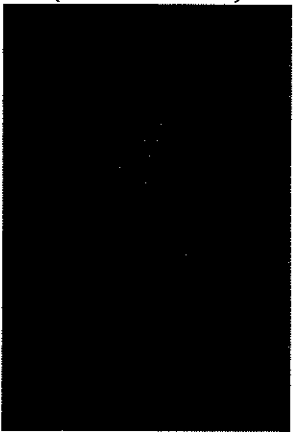
Split breast with ribs
(internal view)



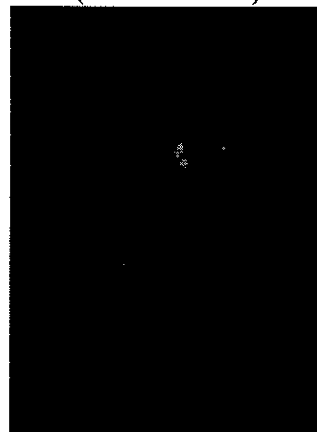
Boneless, skinless split breast with rib meat
(external view)



Boneless, skinless split breast with rib meat
(internal view)



Split breast
(external view)



Split breast
(internal view)



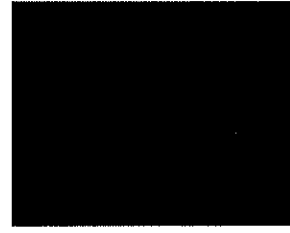
Boneless, skinless split breast
(external view)



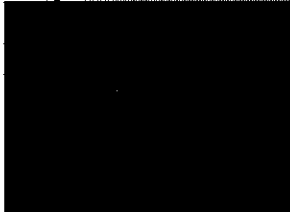
Boneless, skinless split breast
(internal view)



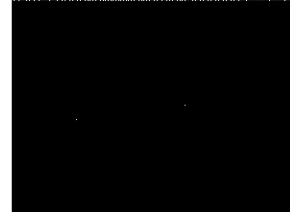
Breast quarter (external view)



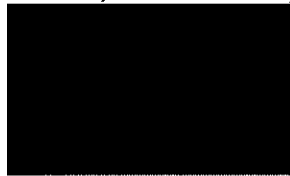
Breast quarter (internal view)



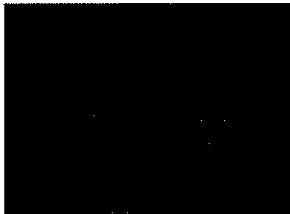
Breast quarter without wing (external view)



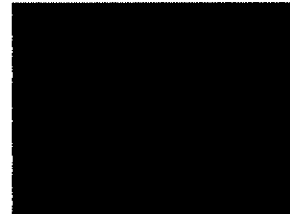
Breast quarter without wing (internal view)



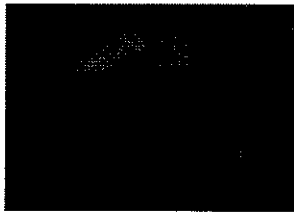
Tenderloin



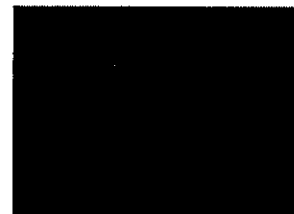
Wishbone (external view)



Wishbone (internal view)



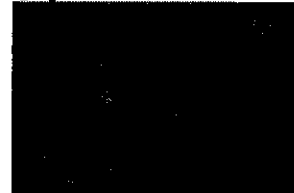
Leg quarter (external view)



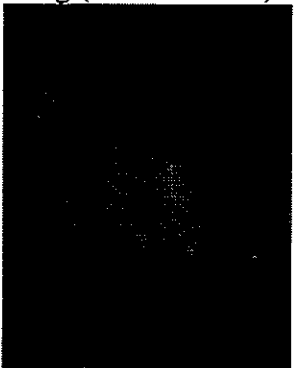
Leg quarter (internal view)



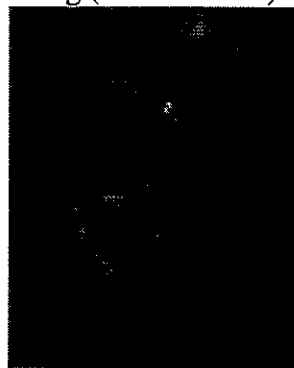
Leg (external view)



Leg (internal view)



Thigh with back portion (external view)



Thigh with back portion (internal view)



Thigh (external and internal view)



Boneless, skinless thigh
(internal and external view)



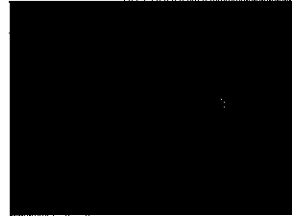
Boneless, skinless drum – flattened
(internal and external view)



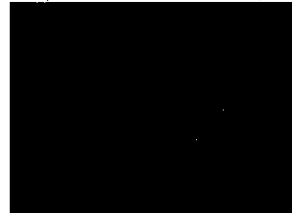
Wing
(top and bottom views)



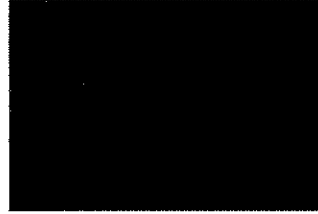
Wing portion
(top and bottom views)



Drumstick
(2 external views)



Boneless, skinless drum – rolled
(internal and external view)



Drumette
(top and bottom views)



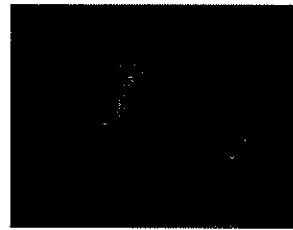
Liver "with gall bladder removed"
(internal and external view)



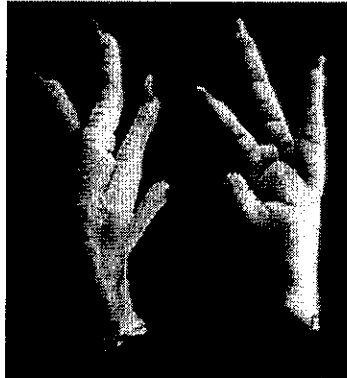
"gizzard" with lining removed
(internal and external view)



Heart
(ventral and dorsal view)



Neck
(with skin and skinless)



Paws
(top and bottom view)

PRESENTING ORAL REASONS

One of the most valuable experiences that a participant encounters in poultry CDE is the presentation of oral reasons. No matter what career one chooses, effective communication skills are a must to be successful. Preparing and delivering reasons will assist the participant in organizing thoughts and presenting them in a confident, precise, and logical manner.

Delivering oral reasons can be a daunting, unpleasant experience, especially for a beginner. Through practice and time spent on voice inflection (altering pitch or tone of voice), terminology (use of USDA or poultry industry terms), and format, one becomes skilled and relaxed in defending selections and placings through oral reasons. Furthermore, developing a set of reasons is a comfortable, confidence-building, learning opportunity.



Class 3 is the oral reasons class for Class 1 Market broilers or Class 2 Egg-type hens for placing. Event officials will designate either Class 1 or Class 2 for oral reasons at the beginning of the event.

Class 6 is the oral reasons class for the four chicken or turkey carcasses (Class 5).

This section discusses written notes for the classes, suggested outlines for presenting oral reasons, suggestions for presenting oral reasons, proper

etiquette for oral reasons, and samples of oral reasons. A sample scorecard is also included.

Written Notes for the Classes

Written notes taken during the placing of broilers, egg-type hens, and turkey carcasses will assist greatly in preparing for the oral reasons classes. The written notes, although not used during the oral presentation, will allow the participant to organize the presentation in a logical and clear manner.

Sample Written Notes for a Class of Broilers (Placing 2-4-3-1)							
Bird #	Body Confirmation			Fleshing			Finish
	Width	Length	Depth	Width	Length	Depth	
1	-	-	-	-	-	-	-
2	+	++	++	-	+	+	++
3	-	+	+	-	+	+	+
4	-	+	+	+	+	+	+

**This unit was revised and edited by Cindy Brown, agriscience teacher, Monache High School, Porterville, CA.*

Sample Written Notes for a Class of Production Hens (Placing 2-4-3-1)							
Bird #	Bleaching	Handling Quality	Abdominal Capacity	Molted Feathers	Comb & Wattles	Head & Eye	Vent
1	Shanks, fully	Narrow abdomen; hard & contracted skin	2X3	3	Pale red, medium, & dull	Balanced head with bright eyes	Moist, medium, & oblong
2	Hocks & tops of toes	Wide abdomen; soft & expanded skin	3X4	2	Red, medium, & glossy	Balanced head with bright eyes	Moist, medium, & oblong
3	Shanks, almost fully	Wide abdomen; soft & expanded skin	3X3	2	Red, medium, & glossy	Balanced head with bright eyes	Moist, medium, & oblong
4	Shanks, almost fully	Wide abdomen; soft & expanded skin	3X4	0	Red, large, & glossy	Balanced head with bright eyes	Moist, large, & oblong

Sample Written Notes for a Class of Turkey Carcasses (Placing 1-2-3-4)				
Factor	Carcass 1	Carcass 2	Carcass 3	Carcass 4
Conformation	> carcass 2	> carcass 3		> carcass 3
Fleshing	breast > carcass 2	legs > carcass 1		poor
Fat covering			> carcass 2	
Exposed flesh		breast > 1/2" tear		
Discolorations	leg – small area			
Disjointed and/or broken bones	none	none	none	none
Missing parts			back portion extends to hips	both wings
USDA Grade	A	B	C	C

Participants are given ample time to review their written notes before the oral presentation and should quietly rehearse the presentation. Rehearsing allows one to speak without hesitation or long pauses during the presentation.

Suggested Outlines for Presenting Oral Reasons

Proper organization of a set of reasons will largely determine the ease with which the reasons judge listens to the oral explanation of the participant's selection of broiler breeders and placing of turkey carcasses. Additionally, the reasons judge will be able to comprehend the participant's thoughts and decisions.

Different systems exist for organizing reasons. The outlines presented here are logical and clear and will enable the participant to adopt and use them. Following the outlines are comments on specific steps.

PRESENTING ORAL REASONS ON THE PLACING CLASS OF BROILERS

- I. Opening Statement
 - A. Introduce yourself by contestant number.
 - B. State the class name and/or number and your placing.
 - C. Present a positive statement about the top broiler.
 - D. Offer a descriptive criticism of the top broiler.
- II. Top pair
 - A. Explain placing 1st broiler over 2nd broiler using comparative terms.
 - B. Grant an advantage to the 2nd broiler using comparative terms (optional).
 - C. Criticize the 2nd broiler with descriptive terms.
- III. Middle Pair
 - A. Explain placing 2nd broiler over 3rd broiler using comparative terms.
 - B. Grant an advantage that the 3rd broiler has over the 2nd broiler using comparative terms (optional).
 - C. Criticize the 3rd broiler with descriptive terms.
- IV. Bottom Pair
 - A. Explain placing 3rd broiler over 4th broiler using comparative terms.
 - B. Grant an advantage that the 4th broiler has over the 3rd broiler using comparative terms (optional).
 - C. Criticize the 4th broiler with descriptive terms.
- V. Closing Statement – Restate the class name and your placing. Thank the judge.

PRESENTING ORAL REASONS ON THE PLACING CLASS OF EGG-TYPE HENS

- I. Opening Statement
 - A. Introduce yourself by contestant number.
 - B. State the class name and/or number and your placing.
 - C. Present a positive statement about the top hen.
 - D. Offer a descriptive criticism of the top hen.
- II. Top pair
 - A. Explain placing 1st hen over 2nd hen using comparative terms.
 - B. Grant an advantage to the 2nd hen using comparative terms (optional).
 - C. Criticize the 2nd hen with descriptive terms.

- III. Middle Pair
 - A. Explain placing 2nd hen over 3rd hen using comparative terms.
 - B. Grant an advantage that the 3rd hen has over the 2nd hen using comparative terms (optional).
 - C. Criticize the 3rd hen with descriptive terms.
- IV. Bottom Pair
 - A. Explain placing 3rd hen over 4th hen using comparative terms.
 - B. Grant an advantage that the 4th hen has over the 3rd hen using comparative terms (optional).
 - C. Criticize the 4th hen with descriptive terms.
- V. Closing Statement – Restate the class name and your placing. Thank the judge.

PRESENTING ORAL REASONS ON THE PLACING CLASS OF TURKEY CARCASSES

- I. Opening Statement
 - A. Introduce yourself by contestant number.
 - B. State the class name and/or number and your placing.
 - C. Present a positive statement about the top carcass.
 - D. Offer a descriptive criticism of the top carcass.
- II. Top Pair
 - A. Explain placing 1st carcass over 2nd carcass using comparative terms.
 - B. Grant an advantage that 2nd carcass has over 1st carcass using comparative terms.
 - C. Criticize 2nd carcass with descriptive terms.
- III. Middle Pair
 - A. Explain placing 2nd carcass over 3rd carcass using comparative terms.
 - B. Grant an advantage that 3rd carcass has over 2nd carcass using comparative terms.
 - C. Criticize 3rd carcass with descriptive terms.
- IV. Bottom Pair
 - A. Explain placing 3rd carcass over 4th carcass using comparative terms.
 - B. Grant an advantage that 4th carcass has over 3rd carcass using comparative terms.
 - C. Criticize 4th carcass with descriptive terms.
- V. Closing Statement – Restate the class name and your placing. Thank the judge.

Strategies for Presenting Oral Reasons

The Introduction should begin with appropriate comments, for example: Good morning, I'm contestant 17A. I placed this class of egg type hens 2- 1- 4- 3. Similarly, close the reasons on a positive note, for example: Based on these reasons, I placed this class 2- 1- 4- 3. Thank you

Comparative terms should be used when giving reasons on your classes. Words with the suffixes “-est” and “-er” help compare rather than describe a bird or carcass. For example: In hens; Hen #1 exhibited the greatest amount of bleaching and had a larger abdominal capacity. In broilers;

Bird #4 exhibited a more correct body conformation, having the greatest amount of breast meat quantity. In turkey carcasses, Carcass #3 exhibited the longest keel being wider in the wishbone.

Granting: For example, if a lower placing carcass or bird does have a factor that is more desirable than the bird placed above it - you may grant that factor. For example: I do grant that carcass #4 exhibited a deeper, fuller body than the carcass placed above it.

Criticizing is also effective in describing a bird or carcass. When criticizing, remember to be clear - it's easy to confuse yourself and the judge, if your reasons are not organized.

After describing your top bird or carcass, you can criticize it. For example: In the top I placed 1 over 2 (1/ 2). 1 exhibits the most bleaching throughout her body parts, in addition to having the greatest abdominal capacity with the most pliable abdomen- I do criticize 1, however, as it is the heaviest bodied bird in the class.

Criticisms are effective when they describe the carcass or bird based on its particular weakness (es). The terminology used should be descriptive, as shown in this example: "Although Number 1 has adequate finish, this broiler places last because it lacks desirable body conformation. She is shallow in depth and short from front to rear of keel." The criticisms are based on merit; thus, they are effective in describing Number 1's deficiencies. Note that comparative terms were not used in the criticism of Number 2. [A comparative statement may have read "However, I criticize Number 2 as her body depth is shallower than Number 4." This less desirable statement may be true, but it tells the reasons judge no more about Number 2 than what was already stated when describing the advantages that Number 4 has over Number 2.]

Suggestions for Presenting Oral Reasons

The participant must remember many important facts when giving a set of oral reasons. The following list of items should help the participant feel well prepared and comfortable when presenting reasons, and ultimately assist in improving on the reasons score.

- Deliver a sincere and precise presentation.
- Present reasons in a logical order and do not repeat statements.
- "Paint" a picture of what is seen in each broiler breeder or turkey carcass.
- Use accurate statements. Additionally, if other statements are used as a filler, they are false statements in the mind of the judge.
- Include and emphasize all the key points. For broiler breeders, place emphasis on body conformation and breast meat quantity after culling any birds for deformities. For turkey carcasses, emphasize the factors that give each bird a USDA quality grade.
- Use accurate and appropriate USDA and industry poultry terminology and vocabulary.
- Do not overuse or repeat terminology excessively.
- State the differences and similarities between pairs.
- Vary the use of terms. Also, avoid using "good," "better," and "best" in describing or comparing the broilers or turkey carcasses.

- Use numbers for identification (such as the “Number 1 carcass”).
- Pronounce all words clearly.
- Demonstrate correct grammar.
- Maintain an appropriate volume of voice, to be modified depending on the size of the room.
- Use proper voice inflection.
- Do not become distracted.
- Achieve the desired outcome.

Proper Etiquette for Oral Reasons

After developing a proper reasons style, it is important for the participant to present them properly and effectively to the official judge. When first entering the reasons room, the way that the participant presents herself/himself is very important, including the style, attitude, and “presence” during delivery. The following list contains important points of etiquette to keep in mind when presenting reasons.

- Be prompt. When the time arrives to present reasons, do not keep the reasons judge waiting. If rushed or pressed for time, simply ask for more time.
- Do not read from the written notes. Leave them outside of the room.
- Stand six to nine feet away from the judge, depending on body height and strength of voice.
- Stand with the feet about shoulder width apart and place both hands behind the back.
- Maintain correct posture. Avoid leaning over toward the judge.
- Do not allow the eyes to wander. Look the judge in the eye or just above the eyes.
- Speak with a strong voice, but only with enough volume to allow the judge to hear the reasons.
- Discuss the class with conviction and confidence. The judge will then know that you really “saw” the broiler breeders or the turkey carcasses.
- Pace the speed of presentation! Do not talk rapidly because the judge may become lost and not be able to process everything heard.
- Try not to exceed the time limit (two minutes).

Samples of Oral Reasons

The sample oral reasons given in the following scenarios are based on the written notes for the classes and the suggested outlines for presenting oral reasons described previously.

SAMPLE REASONS FOR A SELECTION CLASS OF BROILERS

Good morning. I am participant 9B. Class 1 – Broilers – is composed of four pullets. I made my selections based first on body confirmation, then on breast meat quantity, and finally finish.

Although Number 1 has no physical deformities, she is not selected because she lacks desirable body conformation. She is shallow in depth and short from front to rear of keel. She is narrow along the back. She also lacks width, depth, and length of breast meat.

Number 2 is the top bird in this class. She exhibits the most desirable body conformation in the class. She also has the largest volume, showing the most length of keel and most depth of body. She has ample length and depth of breast meat. However, I criticize her for lack of desirable width in the breast.

Number 4 follows the pattern of Number 2 very closely. This bird has desirable length and depth of body, but lacks body width. Number 4 has a desirable volume of breast meat, but is lacking in width of breast.

Number 3 is also a quality meat bird. She is a large-bodied pullet, similar to Number 4. She has the most breast meat of all the pullets in the class. She is wide across the breast at the points of wing attachment. I criticize her for not having an ideal depth of body.

For these reasons, I placed these broilers 2-4-3-1. Thank you. Do you have any questions?

SAMPLE REASONS FOR A PLACING CLASS OF EGG-TYPE HENS

Good morning. I am participant #17B. I placed this class of egg type hens 2- 4- 3- 1. I began (started) this class with hen #2. 2 is the highest producing hen in the class based on pigmentation loss and her tremendous abdominal capacity.

In the top, I placed 2 over 4 (2/4). 2 is more bleached throughout her body parts especially through the shanks and tops of toes. 2 had a greater abdominal capacity with a 4 finger distance from pubis to keel and a 4 finger distance from pubis to pubis. In addition, 2 was sharper over her keel and pubic bones, being a lighter, more economical bird. *I do grant, however, that hen 4 was softer and more pliable in her abdomen.

In the middle, I placed 4 over 3 (4/3). 4 more closely follows my top bird in egg production. 4 exhibited more bleaching throughout her vent, eye ring, ear lobe, beak and shanks in addition to having a greater abdominal capacity with a 3 finger distance between pubis and keel and a 3 finger distance from pubis to pubis. 4 was a more vigorous bird with more

In the bottom, I placed 3 over 1 (3/1). *I do criticize 3 for lacking abdominal capacity; however, I did place 3 over 1. 3 is a higher producing hen exhibiting more bleaching throughout her shanks with a larger, moister vent.

In the bottom, I placed 1. 1 is the lowest producing hen in the class with the most pigmentation (or least amount of bleaching) throughout her hocks and tops of toes. Added to the fact 1 was pinched in her pubic bones and lacked pliability in her abdomen. Therefore I placed this class of egg type hens 2- 4- 3- 1. Thank you.

SAMPLE REASONS FOR A PLACING CLASS OF TURKEY CARCASSES

Good morning. I am participant 32C. I placed the dressed turkey hens 1-2-3-4.

I started the class with the Number 1 carcass because it has the highest attributes of a grade A turkey. A small discoloration is present on the leg, but it is not large enough to downgrade the carcass.

The Number 1 carcass places over the Number 2 carcass. The conformation of the breastbone, back, legs, and wings is of higher quality. The breast has greater fleshing. I grant that Number 2 has more leg fleshing than does Number 1. However, Number 2 is downgraded to a "B carcass" because of the one-half inch skin tear on its breast.

The Number 2 carcass places over the Number 3 carcass. It has greater conformation. I grant that Number 3 has more fat covering (a desirable factor) than Number 2, but is criticized for being a grade C carcass caused by the missing back portion extending to the area between the hip joints.

The Number 3 carcass places over the Number 4 carcass, also a grade C, because it has more salable meat yield. Number 3 has a higher volume of marketable meat as Number 4 is missing both entire wings. Thus, the value of Number 4 would be less than that for Number 3. I grant that Number 4 has a higher quality conformation, but it is criticized for poor fleshing. For these reasons, the class of dressed turkey hens places 1-2-3-4. Thanks for your time today.

SCORECARD FOR ORAL REASONS

<i>Factor</i>	<i>Point Value</i>
*Delivery and Appearance	12
Participant dressed appropriately	
Participant stood firmly and faced the judge	
Participant spoke distinctly & with adequate volume	
Participant used appropriate opening & closing sentences	
Participant spoke smoothly & without long pauses	
Participant expressed confidence and convinced the judge	
*Proper Use of Terms	10
Participant emphasized proper evaluation factors	
Participant used and defined appropriate terms	
*Accuracy of Statements	10
Participant described birds/carcasses based on visual appraisal	
Participant presented true statements	
*Importance of Points Covered	18
Participant explained why one bird/carcass placed over another	
Participant stressed crucial differences among birds/carcasses	
Participant presented complete descriptions of each bird/carcass	
TOTAL	50

WRITTEN EXAMINATION

Class 13 is a written examination consisting of thirty (30) multiple-choice items. Five (5) or more require the participant to perform mathematical calculations.

The purpose of the examination is to determine a participant's knowledge of poultry science and management. In preparing for the written examination, the participant engages in reading and learning activities related to the production, processing, marketing, and consumption of poultry and poultry products. Additionally, preparing for the examination allows the participant to develop a sound perspective for using the decision-making process.

Event officials use the following resource materials when developing written examination items:

Poultry Science Manual for National FFA Career Development Events (Sixth Edition). This publication provides information from which most of the written examination items are derived. The participant should know the information in all sections of the publication. However, the Managing Poultry Enterprises section identifies the topics selected for each year's written examination, and clarifies specific subject matter to be used in even-numbered years, odd-numbered years, and all years during the 2012 – 2016 time frame.

Evaluation of Further-Processed Poultry Meat Products (PPT presentation), 2006 Edition, (IMS Catalog #9333NC). The digital images are part of a PPT program on a CD supplementing the printed manual.

Poultry Grading Manual - Agriculture Handbook Number 31(Latest USDA Edition) (IMS Catalog #0414). The reference is on a CD that supplements the printed manual.

Egg Grading Manual - Agriculture Handbook Number 75 (Latest USDA Edition) (IMS Catalog #0417). The reference is on a CD that supplements the printed manual.

The resource materials listed above are available from:

Instructional Materials Service (IMS)
Department of Agricultural Leadership, Education, and Communications
Texas A&M University
2588 TAMU
College Station, Texas 77843-2588
<http://im.tamu.edu>
ims@tamu.edu

SAMPLE WRITTEN EXAMINATION ITEMS *

Directions: Using your scan sheet and No. 2 pencil, bubble the letter corresponding to the correct answer.

1. When evaluating precooked breaded chicken patties, which of the following is not considered “foreign material?”
A. mouse droppings B. filler material C. insect(s) D. hair(s)
2. The various species of poultry belong to the class *Aves*. Which of the following common types of poultry is a member of the order *Anseriformes*?
A. ducks B. chickens C. turkeys D. pheasant
3. Egg transmission is the “major mode of transmission” for which of the following diseases?
A. infectious coryza B. fowl pox C. mycoplasmosis D. aspergillosis
4. What is the percent hatchability if 1,800 chicks hatched from 2,000 incubated eggs?
A. 60% B. 70% C. 80% D. 90%
5. According to the chart at the right, as a method for disposing of dead birds by composting, what is the appropriate ratio (parts by weight) of poultry manure to poultry carcasses?
A. 2 to 3 : 1 B. 1 : 2 to 3 C. 20 to 30 : 10 D. both A & C are correct

* Copies of previous years’ exams are available from the National FFA Organization, Indianapolis, IN and Instructional Materials Service, ALEC, Texas A&M University.

(Answers to the sample written examination items above: 1-B, 2-A, 3-C, 4-D, and 5-D.)

TEAM ACTIVITY

Class 14 is the team activity portion of the Poultry Evaluation Career Development Event.

The team activity involves group decision-making. All members of a team entered in the event will work collaboratively to perform an activity (solve a problem) related to an area of poultry production and management.

During the event, team members –

- receive information about a specific area of the poultry industry,
- combine that information with a knowledge of poultry production and management,
- review a management problem or problems,
- use a logical process to solve the identified problem(s), and
- report the solution(s).



CLASS FORMAT

The team activity is performed at the beginning of the event (prior to the other thirteen classes).

Each team observes and/or is provided information about a production and management area in the poultry industry from handout literature, video clips, digital slides, CD/DVD programs, and/or other media types (for example, the Internet).

Each team records information about the problem or problems identified during the presentation.

After viewing the appropriate situation/scenario, each team answers fifteen (15) multiple-choice type questions. Each question has a value of thirteen and one-third (13.33) points.

The questions draw upon information gained from viewing the presentation and from reference material studied in preparation for the event. This includes information used for preparing the written examination (Class 13).

All members of the team can consult with each other to determine answers to the questions.

At least thirty (30) minutes (with time beginning after the presentation) are allowed to complete the team activity. The event official calls for the team's answer sheet at the designated time.

PRODUCTION AND MANAGEMENT SCENARIOS

Three example scenarios with sample questions are presented in the remainder of this section. Keep in mind that each scenario is not inclusive of the entire presentation. Answers to the sample questions are provided after each scenario.

Example Scenario #1

A turkey house (40 feet wide and 500 feet long) may be used to raise either turkey hens or toms. Use the information below to solve problems about density, cost, value, and profitability.

PRODUCTION DATA	Hens	Toms
Efficiency of Operations		
Number of birds per house	8,000	5,600
Days of production (market age)	112	147
Live weight (target market lbs.)	20	40
Feed conversion (cumulative)	2.40	2.65
Integrator Costs		
Feed costs (cents per lb. of feed)	10	10
Other cost (cents per lb. of live wt.)	25	25
Yield		
Whole carcass (dressing percentage)	80	
Breast (percentage of live weight)		27
Thigh (percentage of live weight)		12
Drum (percentage of live weight)		10
Wing (percentage of live weight)		8
Value		
Ready-to-Cook Carcasses (cents per lb.)	75	
Breast (cents per lb.)		150
Thigh (cents per lb.)		80
Drum (cents per lb.)		40
Wing (cents per lb.)		60

SAMPLE QUESTIONS:

- The density of toms raised in the house would be ____ ft²/bird and ____ lb./ft².
 A. 2.5, 8 B. 3.25, 9.5 C. 3.57, 11.2 D. 3.5, 8.2
- Total feed costs for all birds would be \$ ____ for hens, or \$ ____ for toms.
 A. 38,400; 59,360 B. 28,400; 38,360 C. 6,667; 8,453 D. 1,920; 1,484

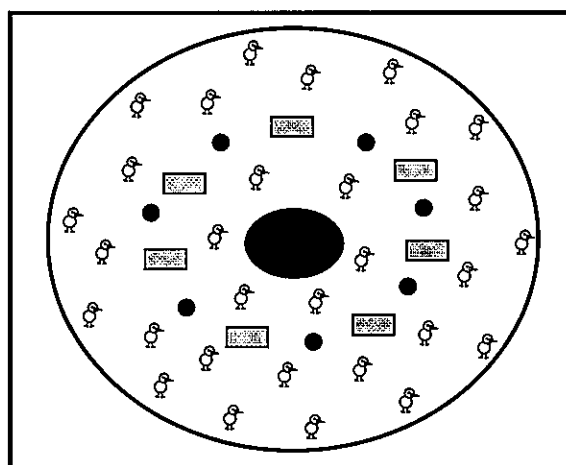
3. Total costs (feed and other) would be ____ cents/hen per day, or ____ cents/tom per day.
 A. 10.71; 18.03 B. 8.75; 14.01 C. 4.29; 7.21 D. 2.25; 3.49

4. Net profit for all birds would be \$____ per hen, or \$____ per tom.
 A. 15; 22.80 B. 3; 3.25 C. 2.20; 2.96 D. 0.60; 0.59

5. Net profit per lb. of bird live wt. would be ____ cents for hens, or ____ cents for toms.
 A. 150; 200 B. 75; 57 C. 15; 8.1 D. 11; 7.4

Answers to the sample questions for Example Scenario #1: 1-C, 2-A, 3-B, 4-C, 5-D.

Example Scenario #2



♂ Chick ● Water Fountain ▨ Feeder Lid ● Gas Hover

Total Pullet Brooding Area: 250 Sq. Ft.

Equipment

- 7 four-liter capacity water founts
- 7 five-foot feeder troughs
- 1 eight-foot, 30,000-BTU gas hover
- Softwood shavings for litter

Feed Type

- Commercial pellets (feed type)
- 3/8" x 1/4" (pellet size)
- 18% (protein content)

Other Information: The number of chicks made up 80% of the total capacity of the hover (heater). Water, feed, and lighting were checked once a day during the first three days to decrease mortality rate. The chicks were on constant lighting for the first 24 hours and then placed on a lighting schedule. The relative humidity of the brooder house was 40%. The brooding area was kept at a temperature of 80 degrees F, two inches above the litter for the first two weeks. The ventilation rate was 1 CFM for each pound of live weight. Vaccination schedule: 1st day – Marek’s, 10th day – Newcastle-Bronchitis, 5th week – Newcastle, 8th week – Bronchitis, and 10th week – Fowl Pox.

SAMPLE QUESTIONS

1. How many pullet chicks were in the hover space?
A. 375 B. 450 C. 600 D. 750
2. What was the total capacity (to the nearest whole gallon) of all the water founts?
A. 4 B. 7 C. 28 D. 56
3. For the first three days, was the frequency of checking water, feed, and lighting adequate? If not, what is the suggested frequency for the pullet chicks?
A. Yes B. No, check 2X/day C. No, check 4X/day D. No, check several times daily
4. How would you describe the brooding space for the pullet chicks?
A. just right B. reasonably adequate C. too much D. inadequate
5. Describe the brooder temperature during the first week?
A. just right B. reasonably adequate C. too high D. too low

Answers to the list of sample questions for Example Scenario #2: 1-C, 2-B, 3-D, 4-D, 5-D.

Example Scenario #3

Your team has been chosen to assist the Mar-Jo Poultry Company in correcting several inconsistencies in one of the poultry processing plants. The plant operates under USDA-FSIS regulations. The plant has two evisceration lines capable of processing 70 birds per minute on each of the SIS lines. Two other lines have new automated equipment, and each is capable of processing 140 birds per minute. Seventy-five people work in the evisceration area. The plant operates two shifts with each shift working seven hours. The plant is operational five days per week and processes broilers 250 days per year. Plant efficiency is measured by two means. The first is line efficiency, which is calculated by dividing the actual processed number of birds each day by the total possible. The second means of measuring is birds per worker hour through the chiller, which is calculated by dividing the total head processed by the total worker hours.

A thirty-minute lunch break and two 15-minute breaks are taken during each shift. Total operating time per shift is seven hours.

SAMPLE QUESTIONS

1. What is the total capacity (number of broilers) of this plant for one day's operation?
A. 352,800 broilers B. 705,600 broilers C. 1,411,200 broilers
D. 2,822,400 broilers

2. The day shift had an evisceration chain to break on one SIS line, and the line was down a total of 30 minutes. How many broilers were not processed by the 7-hour day shift workers during the downtime?

- A. 60,900 broilers B. 30,450 broilers C. 15,225 broilers
D. 2,100 broilers

3. The U.S. Government must inspect all poultry sold interstate. What segment of the government is responsible for the inspection service?

- A. FDA B. USDA C. FDIC D. NRCS

4. Which of the following is a government inspector looking for when examining a poultry carcass?

- A. signs of disease B. tainted fecal material
C. contamination of ingesta and/or bile D. all of the above

5. What is the primary purpose of electrical stunning of broilers?

- A. render the birds unconscious B. improve flow of venous blood
C. promote carcass tenderness D. none of the above

Answers to the list of sample questions for Example Scenario #3: 1-A, 2-D, 3-B, 4-D, 5-A.