Darke County Poultry Resource Book

By: Blake Addis

This is the Skillathon study guide for all ages, it will specify which age needs to study what parts. I am writing this because there is no resource guide for poultry and this will allow something to study off of.

The age break up is

Beginners 8-11

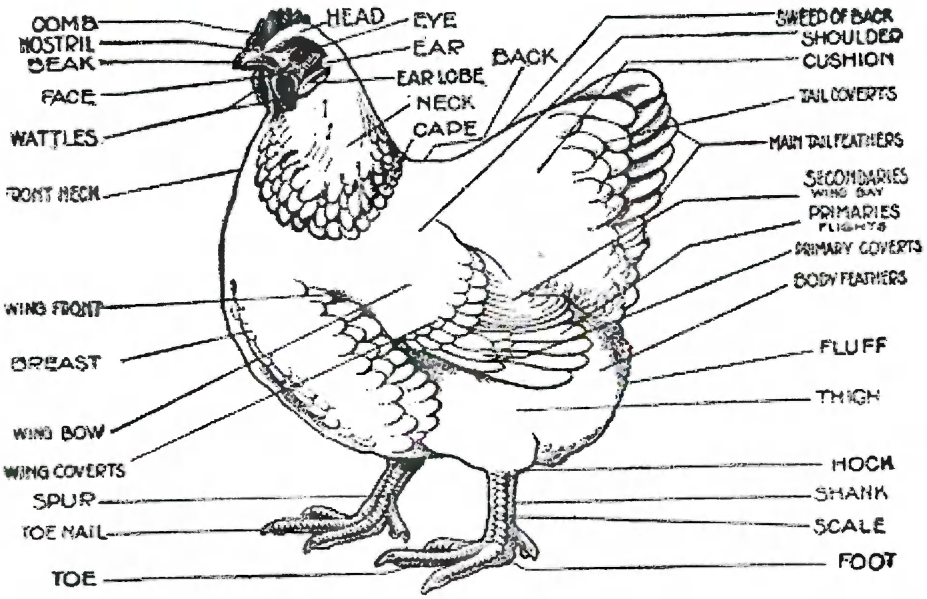
Juniors 12-14

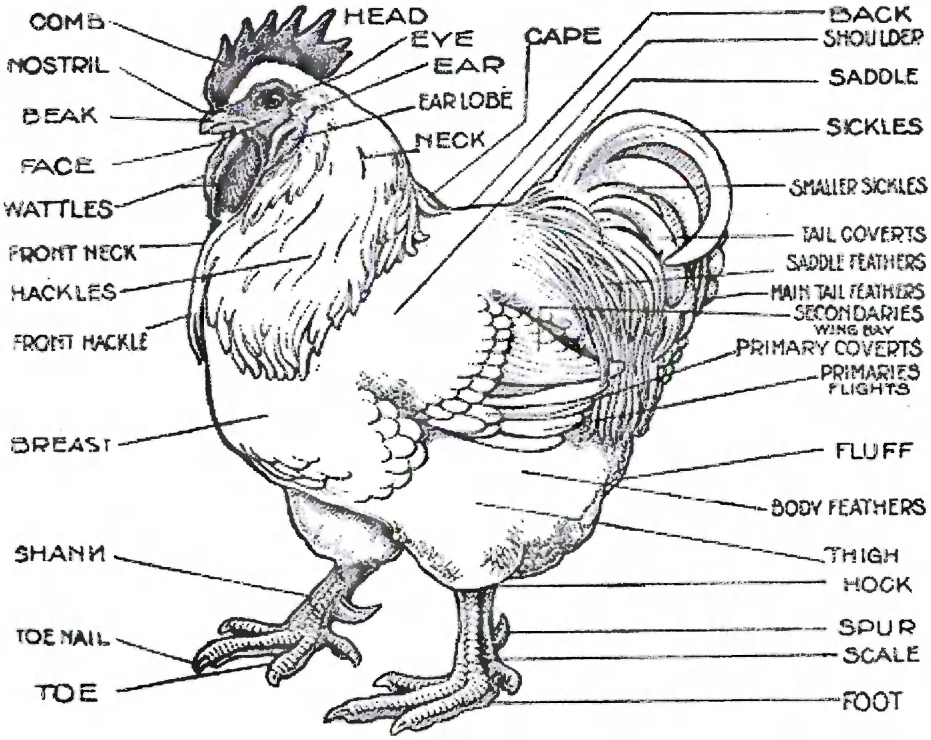
Seniors 15-18

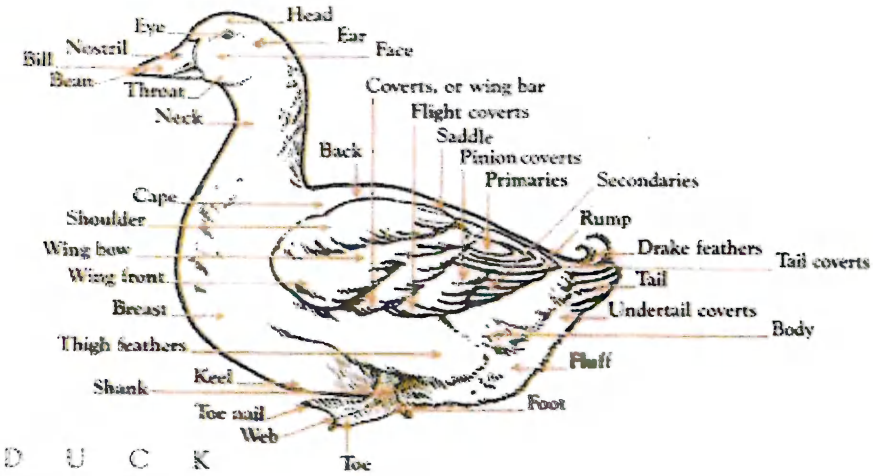
When studying make sure to look over the given information, at Skillathon there will be stations set up and you will have to show your knowledge by labeling all the given diagrams. Hopefully, after looking over this, you can do well at Skillathon. <u>When creating Skillathon the testers will have the study guide created in mind when making the test so the kids are tested on things that they will know from the study guide.</u>

Parts For All Ages

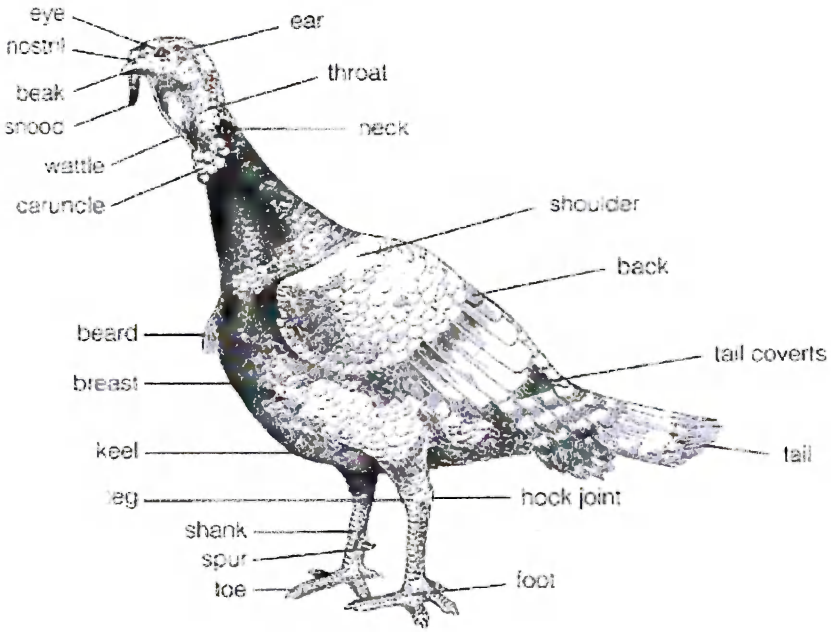
- Jr- 1 bird, 10 parts
- Inter- 2 birds, 10 parts
- Sr.- 2 birds, 15 parts






Head
Eye
Ear
Face
Nostril
Bill
Bean
Throat
Neck
Coverts, or wing bar
Flight coverts
Saddle
Back
Pinion coverts
Primaries
Secondaries
Cape
Shoulder
Rump
Wing bow
Drake feathers
Tail coverts
Wing front
Tail
Breast
Undertail coverts
Body
Thigh feathers
Fluff
Keel
Shank
Foot
Toe nail
Web
Toe

D U C K

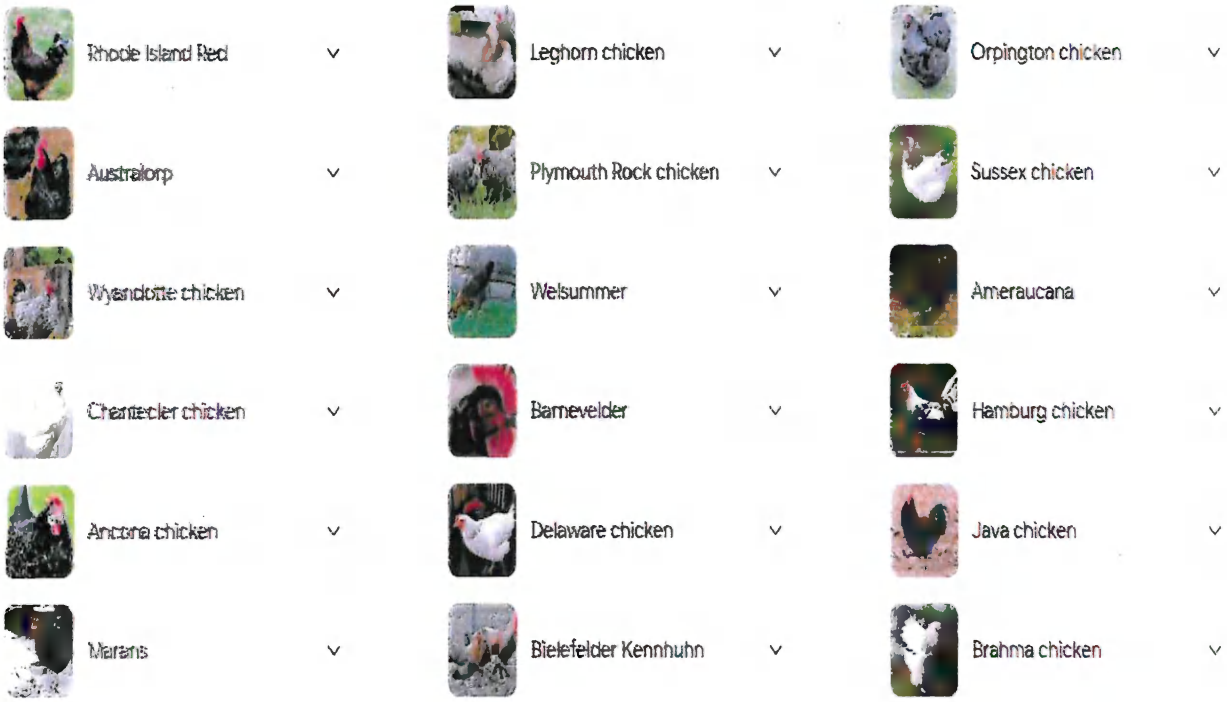

eye
ear
nostril
throat
beak
snood
neck
wattle
caruncle
shoulder
back
beard
tail coverts
breast
keel
tail
leg
hock joint
shank
spur
toe
foot

All Ages Breeds

This is just a sample of some of the breeds that may be asked about.

- **Each age breakup** will be asked for 10 breeds, it is up to the tester whether the breeds will be the same or different for each age.

Breeds



Magpie
(Female) Light Duck

Muscovy
(Female) Heavy Duck

Orpington
(Male) Light Duck

Pekin
(Female) Heavy Duck

Rouen
(Male) Heavy Duck

Rouen Clair
(Female) Heavy Duck

Saxony
(Male) Heavy Duck

Silver Appleyard
(Female) Heavy Duck

The A-Z of Domestic Ducks

Abacot Ranger
(Male) Light Duck

Aylesbury
(Male) Heavy Duck

Bali
(Male) Light Duck

Black East Indian
(Female) Bantam Duck

Blue Swedish
(Female) Light Duck

Call
(Female) Bantam Duck

Campbell
(Male) Light Duck

Cayuga
(Male) Heavy Duck

African Geese
Heavy Geese

American Buff Geese
Heavy Geese

Brecon Buff Geese
Medium Geese

Buff Back / Grey Back Geese
Medium Geese

Chinese Geese
Light Geese

Czech Geese
Light Geese

Embden Geese
Heavy Geese

Pilgrim Geese
Light Geese

All Ages Feeds

Pellets

Crumbles

1. Mash 2. Whole Corn, there will be Cracked Corn too | 3. Pellet 4. Scratch Grain

Pellet size crushed oyster shell and coral calcium.

MannaPro

- **Each age bracket** will be asked to identify 7 different types of feed and label them correctly, again above is just a sample of some of the feeds that will be chosen. It is up to the tester's discretion on which feeds they want to use and test on.

All Ages Medicine Label

- Below is a labeled example of the medication label, the Jr. and the Inter will be asked to label all 7 parts of the medication label.

Name of Drug ***OMNIBIOTIC***

(hydrocillin) *Active Ingredient(s)*

Directions for use:
See package insert

Cautions and Warnings

Warning: Milk that has been taken from animals during treatment and for 48 hours after the last treatment must not be used for food. The use of this drug must be discontinued for 30 days before treated animals are slaughtered for food. Exceeding the highest recommended dosage level may result in antibiotic residues in meat or milk beyond the withdrawal time.

Withholding Times

Store between 2° and 8°C (36° and 46°F)
Keep dry and away from light *Storage*

Quantity of Contents Net contents: 100 ml

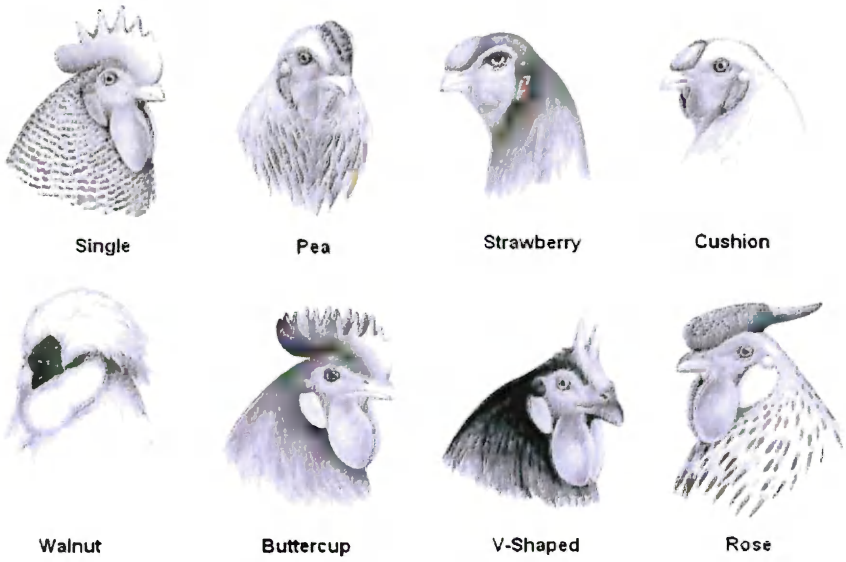
Distributed by
USA Animal Health, Inc. *Name of Distributor*

Lot Number Lot # 0009900-Q123

Expiration Date 05/17/XX *Date of Expiration*

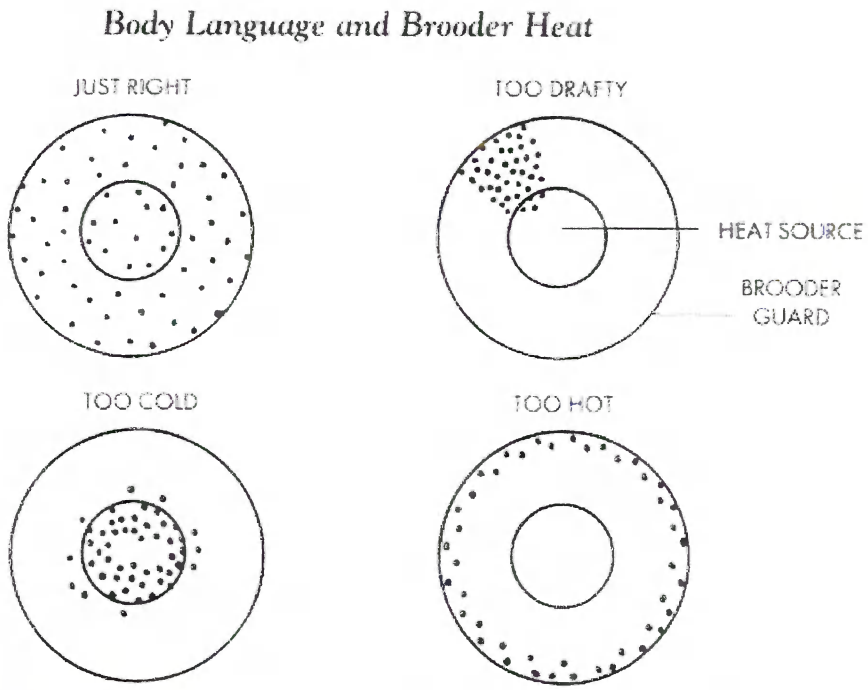
TAKE TIME
OBSERVE LABEL DIRECTIONS

Beginners Combs



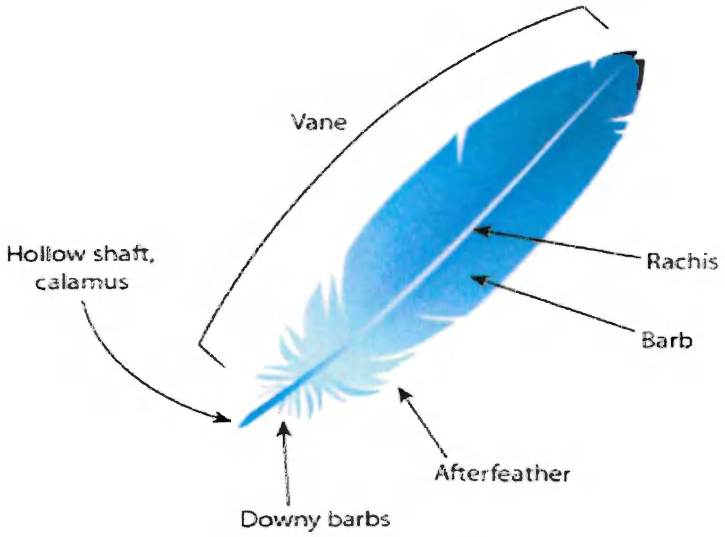
- The jr. will be asked to label 6 of the 8 combs listed above in a match setup.

Juniors Brooder Setup



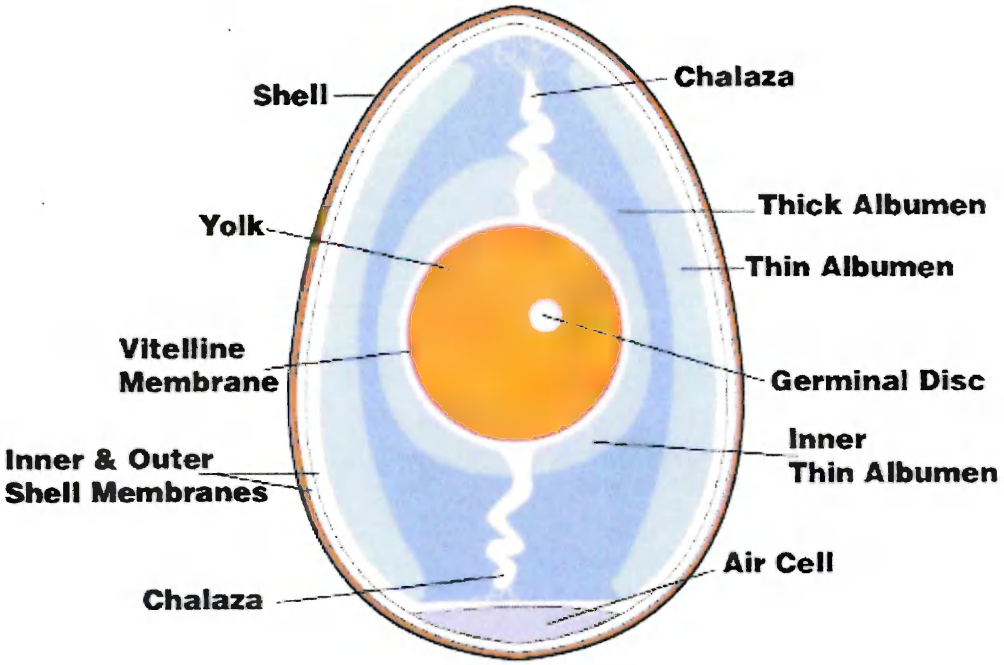
- **Only the juniors** will have to do the Brooder Arrangement. There will be photos placed on the table and the correct situation will need to be matched with the description.

Juniors Parts of the Feather



- **Only the Jr.** will have to place labels on the feather. There will be 6 parts that will have to be labeled.

Seniors Parts of the Egg



- The **seniors** will be asked to label correctly the parts of an egg, it will be matching.

Each of the age brackets will be asked to write a thank you note as part of skillathon to send to our buyers after the fair to thank them for all of their generous donations throughout the year. Each bracket of kids will also need a copy of their current record book as that will be looked at when scoring skillathon.

Sample Tie Breaker Questions:

Beginners-

1. How long does it take for an egg to hatch?
    a. 21 days
2. At about what age do pullets start laying eggs?
    a. Around 16-24 weeks
3. How old is a pullet?
    a. Under 1 year
4. Do you need a roster for a hen to lay eggs?
    a. NO
5. What is most important for poultry survival?
    a. Water

Juniors-

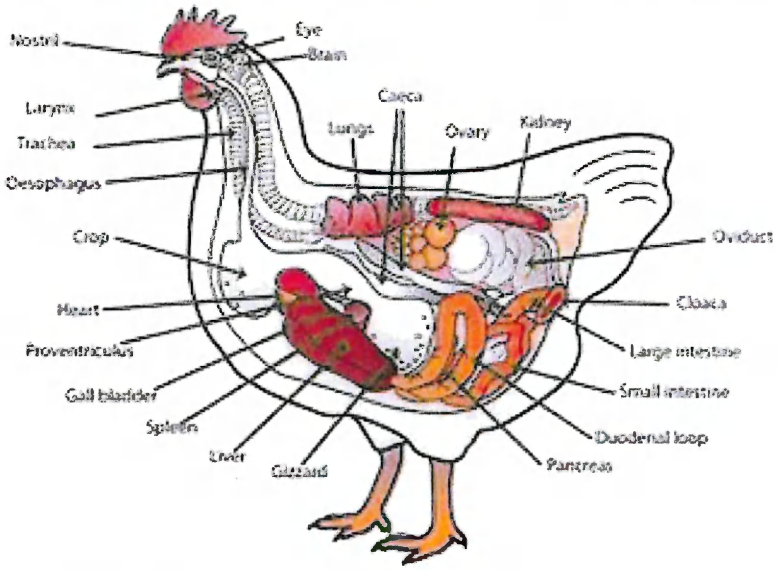
6. What is a tom?
    a. Male turkey
7. How many types of combs are there?
    a. 7
8. What temp should most eggs be incubated?
    a. 99 degrees F
9. Eggs are almost the perfect food what important nutrient are they missing?
    a. Vitamin D
10. What is a Capon?
    a. Castrated male chicken

Seniors-

11. What are the most common food ingredients in poultry diet?
    a. Corn and Soybean meal
12. What will tell you what color the eggshell will be on hens?
    a. Ear lobes
13. To keep hens on the peak of their laying ability how many hours of sun do they need?
    a. 16 hr.
14. What are the major external parasites of poultry?
    a. Lice and mites
15. What is the purpose of turning eggs in the incubator?
    a. To keep the embryo from sticking to the membrane and dying

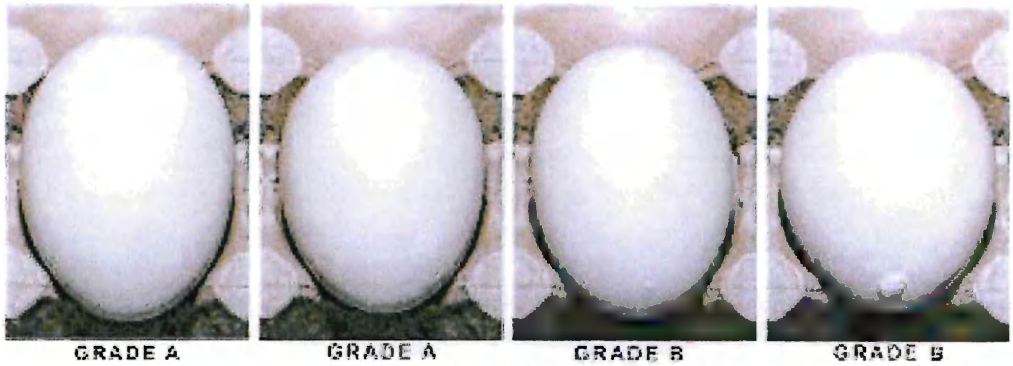
Seniors Digestive System

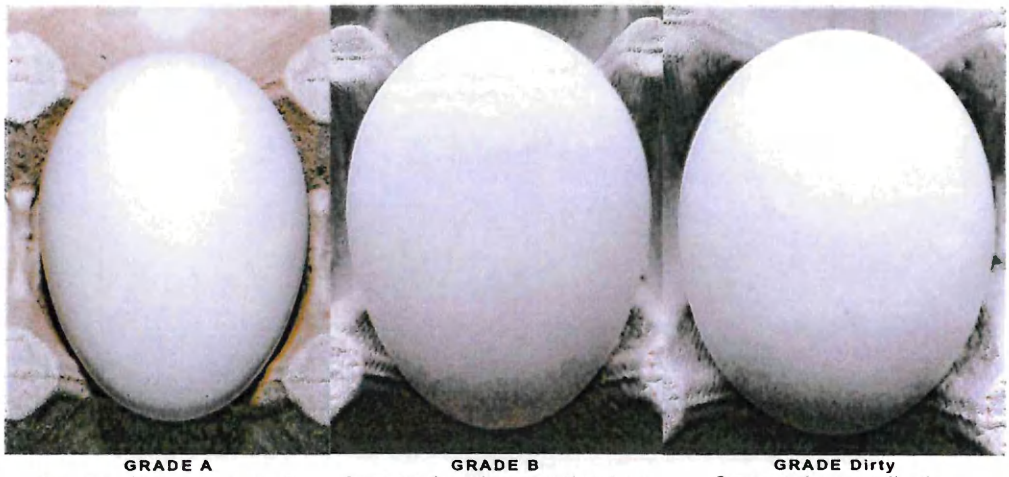
- Below is a diagram that only the seniors will need when studying the digestive system. The seniors will be asked to correctly label 5 parts of the digestive system.



Junior Exterior Egg Grading

- Below is a sample of what some of the eggs will look like when labeling eggs with their grade. Youth participants will be asked to look at eggs or photos of eggs and grade them as so.





GRADE A
Has translucent cage mark

GRADE B
Cage mark stains covering less than 1/16 of shell

GRADE Dirty
Cage marks are adhering material

Seniors + Intermediate Only

NATIONAL 4-H POULTRY JUDGING MANUAL
Revised December 2020

MARKET EGGS - EXTERIOR QUALITY

Evaluating eggs for exterior quality reduces the number of eggs with defects that detract from the eggs' appearance or that would have a low probability of surviving the rigors of handling in normal market channels. In other words, we want the consumer to have clean, unbroken eggs with practically normal shape and texture. Contestants should not be too harsh in assigning a grade to eggs that may have minor defects. This is especially important when judges have gained experience in evaluating eggs with various degrees of abnormalities. Shell color does not affect the quality of the egg and is not a factor in the U.S. standards and grades. Eggs are usually sorted for color and sold as either "whites" or "browns." For the 4-H poultry judging contest exterior egg classes, all chicken eggshell colors can be used.

Table 1 summarizes the descriptive terminology used in the USDA Egg Grading Manual to help determine an egg's grade by exterior quality. Grades AA and A have identical standards for exterior quality. For 4-H poultry judging contests, therefore, eggs will be assigned the grades of A, B, Dirty, or Loss. The factors that affect exterior quality are discussed below. Eggs graded for exterior quality cannot be handled during the contest. Since contestants are not able to handle the eggs, the eggs are placed sideways on egg cartons and contestants must assume the unseen side is free of any stains, adhering material, cracks, or defects.

Table 1. USDA standards for grading grading exterior quality of market eggs

FACTOR	GRADE			
	AA/A	B	DIRTY	LOSS
STAIN	Clean - may show small specks, stains, or cage marks that do not detract from general clean appearance of the egg; may show traces of processing oil	Slight to moderate localized stain covering less than 1/32 of shell or scattered stains covering less than 1/16 of shell	Prominent stains or Slight to moderate localized stain covering more than 1/32 of shell or scattered stains cover more than 1/16 of shell surface	N/A
ADHERING DIRT OR FOREIGN MATERIAL	N/A	N/A	Any adhering dirt or foreign material	N/A
EGG SHAPE	Approximately the usual egg shape	Unusual or decidely misshapened (long, round, or distorted)	N/A	N/A
SHELL TEXTURE	May have rough areas and small calcium deposits that do not materially affect shape or strength	Extremely rough area that may be faulty in soundness or strength May have large calcium deposits	N/A	Checked: Broken or cracked shell, but membranes intact, no leaking Leaker: Has broken or cracked shell with membranes broken and contents leaking or free to leak
RIDGES	Slight ridges that do not materially affect shape or strength	May have pronounced ridges	N/A	N/A
SHELL THICKNESS	Free of thin spots	May show pronounced thin spots	N/A	N/A
BODY CHECKS	Absence of body checks	May show pronounced body checks	N/A	N/A

CLEANLINESS

Grade A eggs must be clean (see Figure 1). Grade A eggs may show small specks, stains, or cage marks that do not detract from the general clean appearance of the egg. Grade A eggs can also show traces of processing oil (used to preserve freshness). The processing oil may create a shiny or opaque appearance.

'Cage marks' is the term used to refer to dirty marks, dirty lines, or translucent lines on the shell when eggs are collected (see Figure 2). Dirty marks or lines are due to rusty or dirty wires in the cage floor or egg roll-out trays. Translucent lines result when the shell fails to dry out quickly after laying. Grade A eggs may show small cage marks that do not detract from the general appearance of the egg. Darker cage marks that do detract from the appearance of the egg would be Grade B. Eggs with large cage marks having a 3-dimensional appearance would be considered dirty eggs.

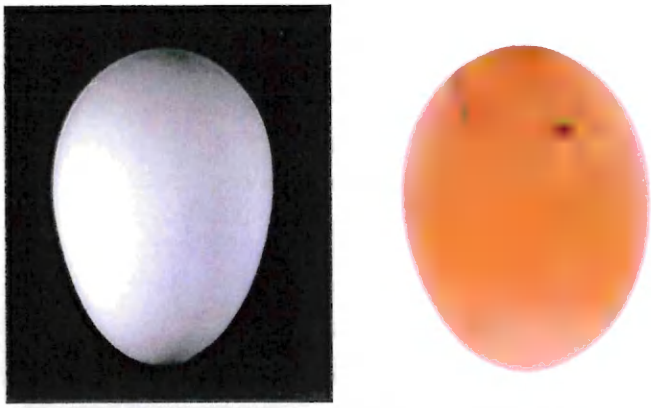
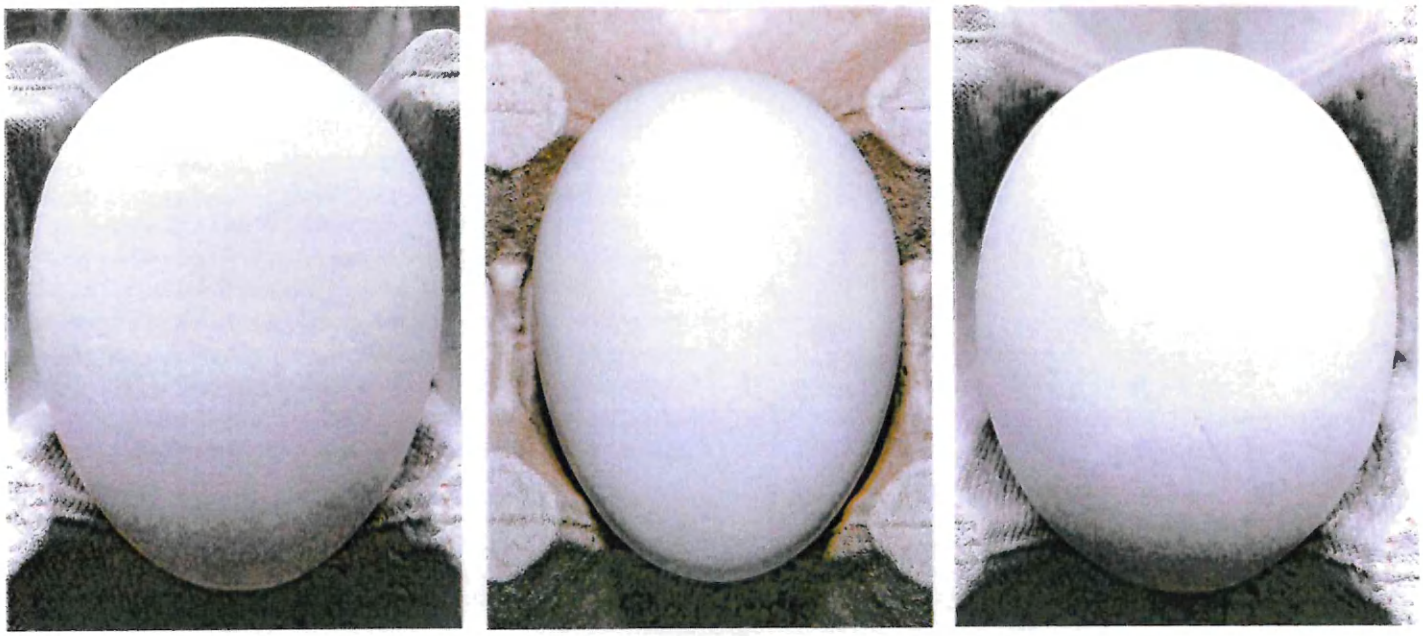


Figure 1. Clean, normal shaped white and brown shelled eggs. Photo credit: USDA



Small cage marks not affecting the appearance: Grade A

Small, translucent cage mark not affecting appearance: Grade A

Small cage marks with a clear 3D appearance: Dirty egg

Figure 1. Examples of eggs with cage marks
Photo credit: Dr. Jacqueline Jacob, University of Kentucky

Any eggs with slight to moderate stains can be Grade B or dirty depending on the number and size of the stains. If there is a single stain, it is referred to as a localized stain. A Grade B egg can have a slight to moderate stain that covers less than 1/32nd of the entire shell (see Figure 3 for relative sizes). If there are two or more stains, these are referred to as scattered stains. The amount of stain is added up, and if the total covers less than 1/16th of the entire shell, it is a Grade B egg. Any eggs with slight to moderate stains covering an area larger than these allowed amounts are classified as dirty eggs. All prominent stains are considered dirty eggs. See Figure 4 for eggs with various levels of stain(s) on the eggshells.

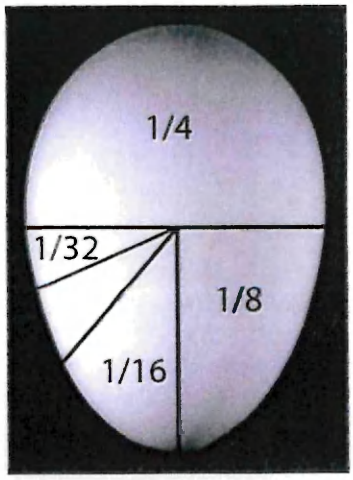
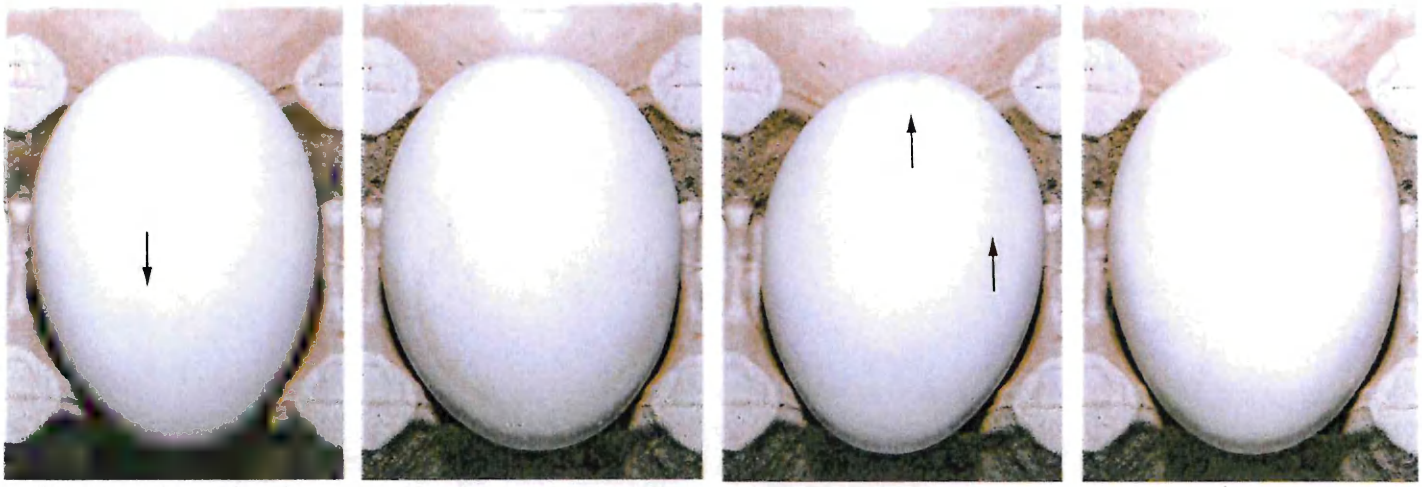


Figure 2. Marked egg showing the amount of shell for 1/16 and 1/32 Image credit: Developed by Dr. Jacqueline Jacob, University of Kentucky from image supplied by USDA



Moderate, single (localized) stain covering less than 1/32nd of the shell: Grade B	Moderate, single (localized) stain covering more than 1/32nd of the shell: Loss egg	Two (scattered) moderate stains covering less than 1/16th of the shell: Grade B	Multiple (scattered) moderate stains covering more than 1/16th of the shell: Dirty egg

Figure 4. Examples of eggs with various numbers (localized and scattered) and sizes of stains resutling in different egg grades.
Photo credit: Dr. Jacqueline Jacob, University of Kentucky

Eggs with adhering material (3-dimensional) larger than a speck (approximately 1.0 mm) should be classified as dirty. Small specks of dust, eyelashes, pencil marks, or lint that may have settled out of the air should not be considered. An attached feather, however, would be considered adhering material. See Figure 5 for examples of eggs with adhering material.

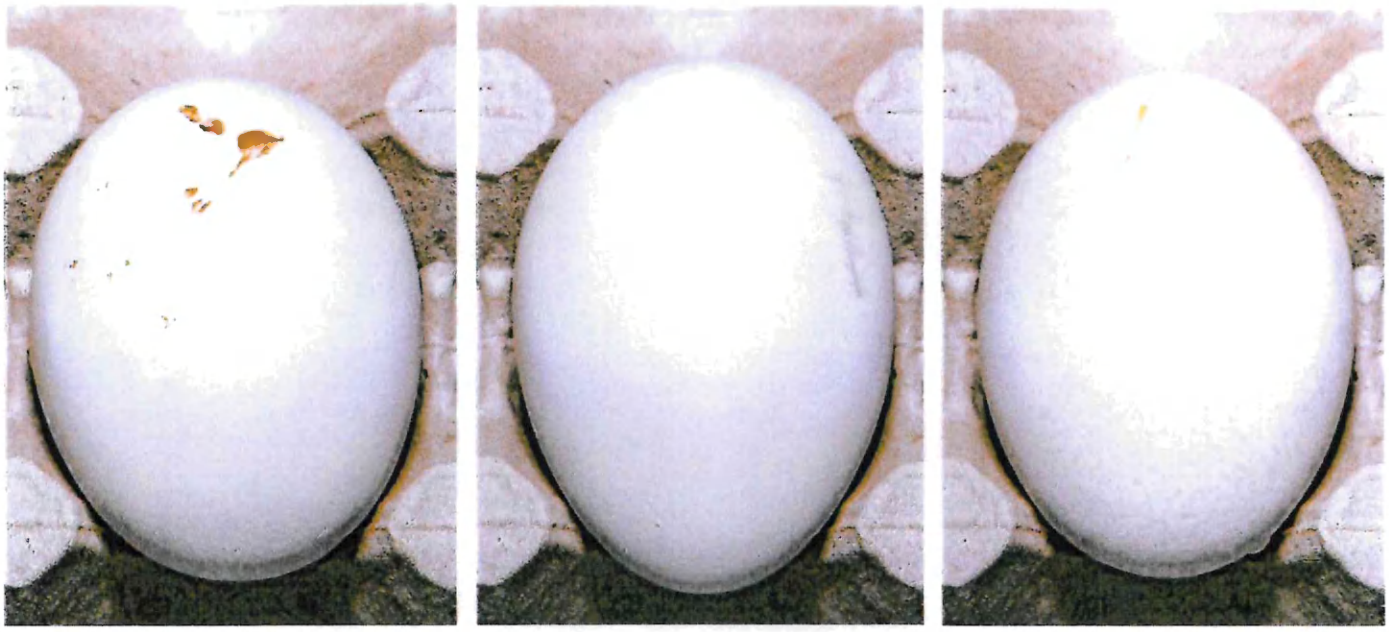


Figure 4. Examples of eggs with adhering material (left to right: manure, feather, and egg yolk)
Photo credit: Dr. Jacqueline Jacob, University of Kentucky

SHAPE

A considerable range of egg shapes may be considered "approximately the usual shape" or Grade A (see Figure 1). Eggs that are spherical (round) or too long to fit in the egg carton should be graded B quality (see Figure 6). B quality grade for egg included eggs that are clearly misshapen or that have definite flat areas.

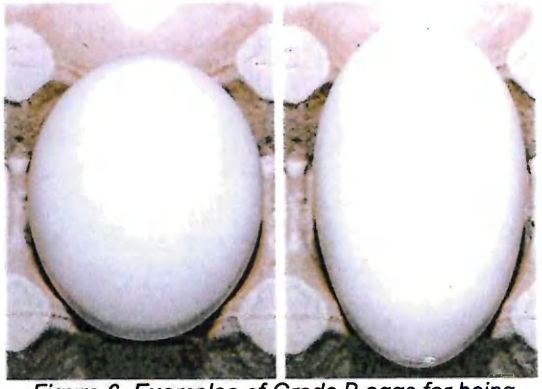
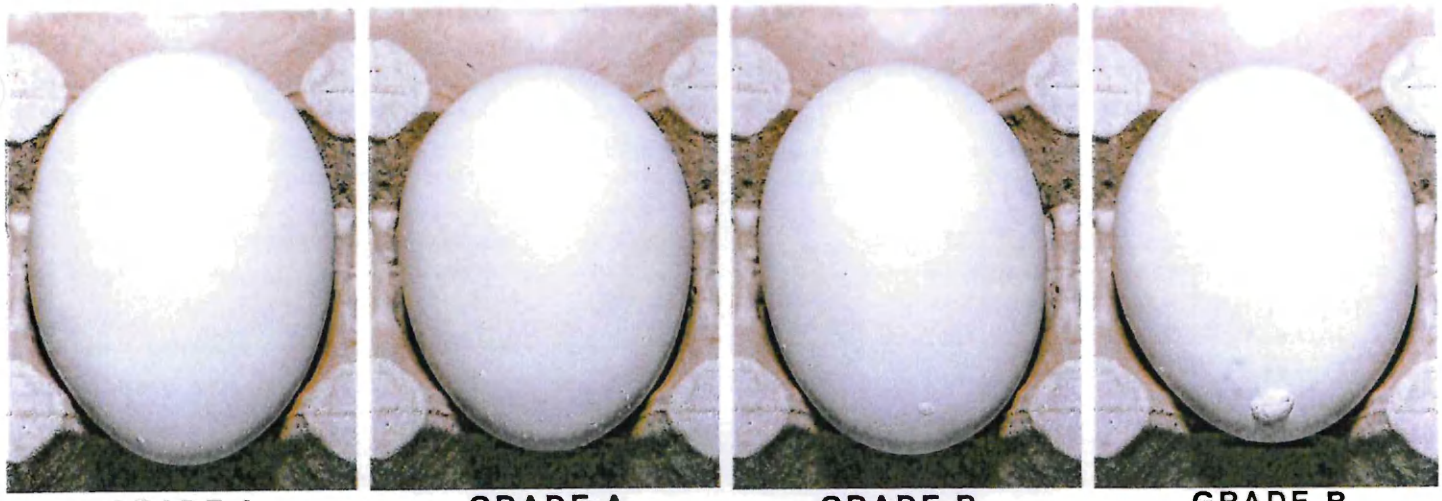


Figure 6. Examples of Grade B eggs for being too round or too long.
Photo credit: Dr. Jacqueline Jacob, University of Kentucky

TEXTURE

Eggs with faulty texture are much weaker in shell strength and maybe broken during distribution. Occasionally calcium deposits will appear on eggshells. Unlike stains, however, the calcium deposits are not added together. If the calcium deposits on an egg are less than 1/8th inch in diameter the egg is Grade A. There is no standard for the number of calcium deposits allowed on an egg, which means that an egg with small calcium deposits over the entire shall be classified as Grade A, as long as all the calcium deposits are each less than 1/8th inch in diameter (see Figure 7).

If any of the calcium deposits are larger than 1/8th inch in diameter, the egg is classified as Grade B. A good rule of thumb is that if you were to run your fingernail across a calcium deposit and a good size hole would be created if it came off, then the egg would be classified as Grade B. Eggs with any calcium deposit greater than 1/8th inch are Grade B.



GRADE A GRADE A GRADE B GRADE B

Figure 6. Examples of eggs with various numbers and sizes of calcium deposits
Photo credit: Dr. Jacqueline Jacob, University of Kentucky

Grade A eggs may have slight rough areas to the shell that do not materially affect egg shape or the strength of the shell. Eggs with extremely rough areas that may be faulty in soundness or strength are Grade B (see Figure 8).

An egg that has a broken shell or a crack in the shell, but its shell membranes are intact, and egg contents do not leak, is considered checked and should be classified as a Loss. An egg that has a crack or break in the shell and the egg contents are exuding or free to exude through the shell, are considered as leakers and should be classified as a Loss. **The national 4-H poultry judging contest does not use leakers.**

Figure 6. Grade B eggs because of extreme roughness of shell
Photo credit: Dr. Jacqueline Jacob, University of Kentucky

RIDGES

Ridges can result in weakened shells. Many eggs show small ridges, and most of these should be classified as Grade A. Those eggs with large ridges are Grade B (see Figure 9).

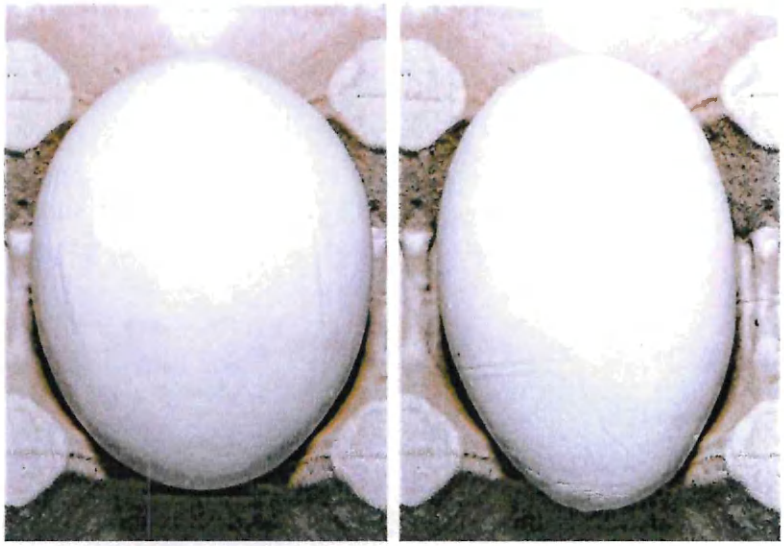


Figure 9. Examples of Grade B eggs because of shell ridges.
Photo credit: Dr. Jacqueline Jacob, University of Kentucky

SHELL THICKNESS

The shell should appear thick enough to withstand reasonable handling without breaking. Grade A eggs must have thick shells with no thin spots. Thin shells or thin spots would place an egg in Grade B. In all cases, the shell must not be broken. The thin spots can be large or small as in Figure 10. Small thin spots are referred to as 'windows.' To be considered a window, the thin spot must be three dimensional. It is important that cage marks (see Figure 2) not be confused for windows.

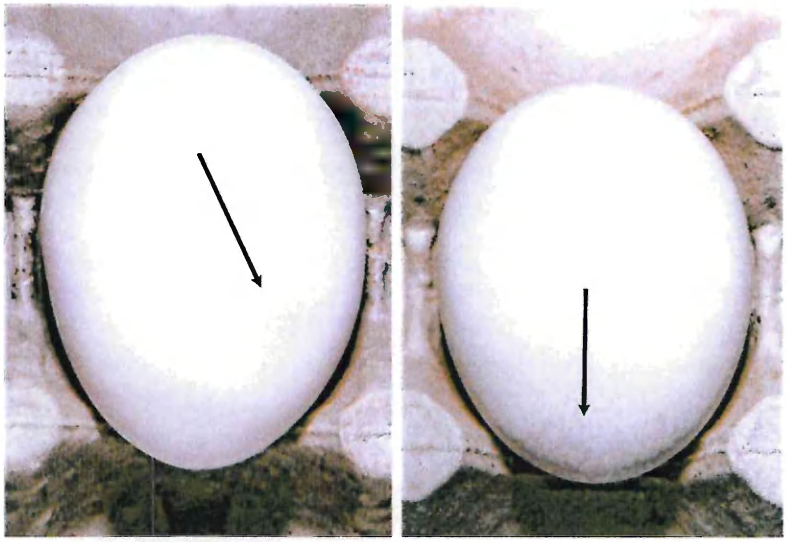


Figure 10. Examples of Grade B eggs for shell thickness.
Photo credit: Dr. Jacqueline Jacob, University of Kentucky

BODY CHECKS

Body checks can cause weakened shells. This is a condition in which the eggshell looks like it is cracked but the shell is intact. Body check occurs during shell formation when the shell is cracked and then partially calcified before being laid. An egg with body check is classified as Grade B. When candled (see Figure 11), the shell can be seen to be intact, but weak.

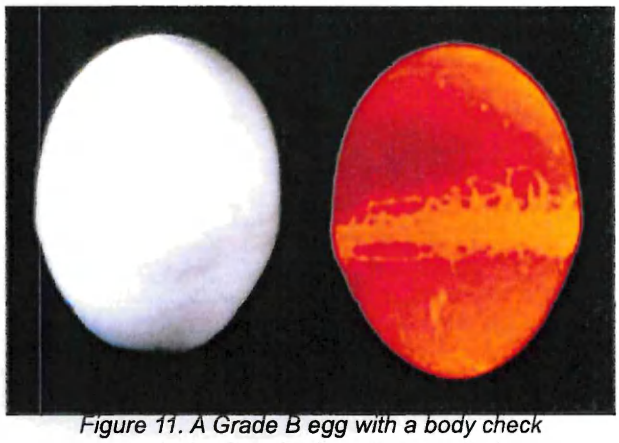
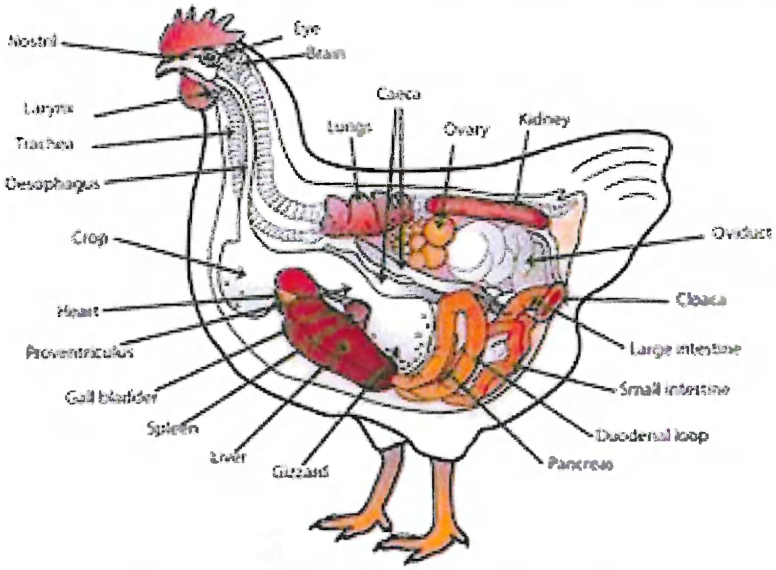


Figure 11. A Grade B egg with a body check and what it looks like when candled
Photo credit: USDA

Seniors Digestive System

- Below is a diagram that only the **seniors** will need when studying the digestive system. The seniors will be asked to correctly label 5 parts of the digestive system.



Junior Exterior Egg Grading

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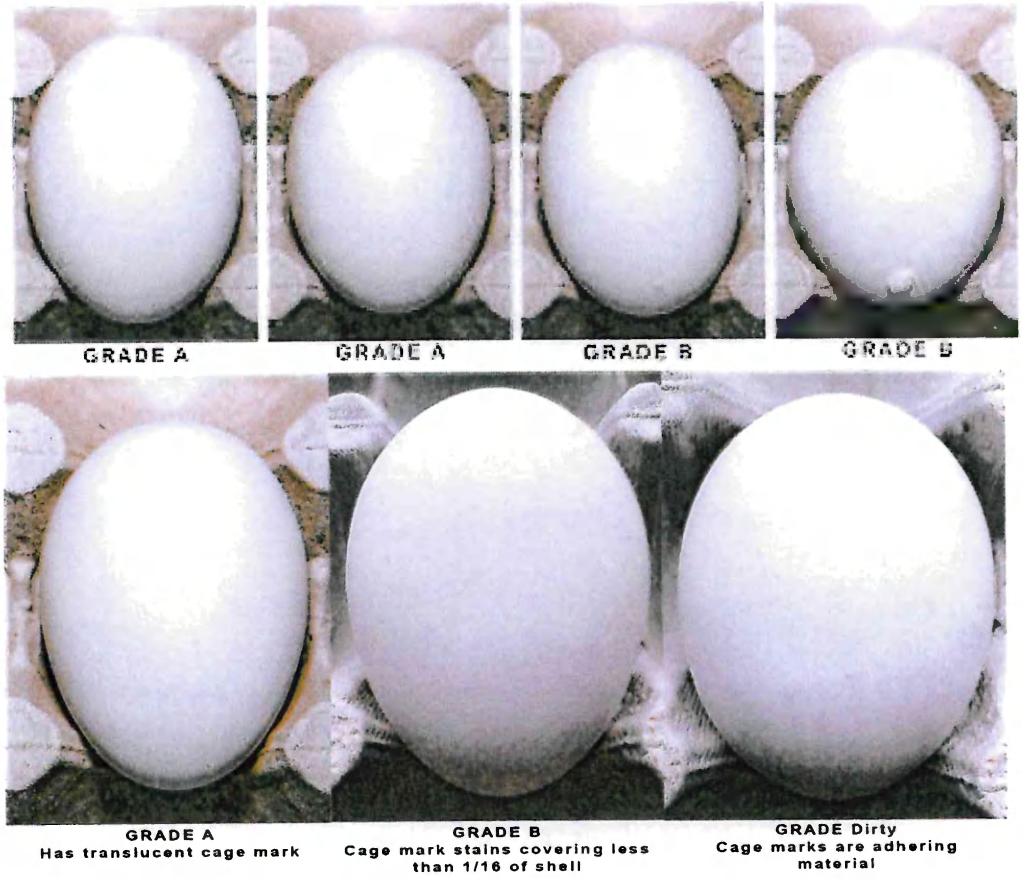

Seniors Only Digestive System

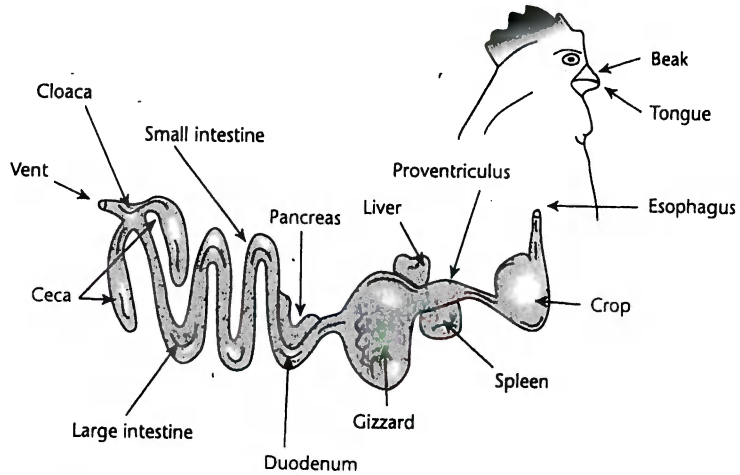

Figure 5-10 The digestive tract of the chicken, a nonruminant, is similar to that of other animals, but includes several special organs.

DIGESTION IN POULTRY

Poultry possess certain special digestive organs that are not found in other animals (Figure 5-10). Feed taken in by poultry first goes to the **crop** for storage. Here it is softened by saliva and secretions from the crop wall.

The feed moves from the crop, through the glandular stomach (the proventriculus), into the muscular stomach (the gizzard). The large red walls of the muscular stomach are thick, powerful muscles. The muscular stomach is lined with a thick, horny membrane-like material called the **epithelium**. Feed particles are crushed and mixed with digestive juices by the **gizzard**.

Two blind pouches, or ceca, are found where the small intestine joins the large intestine. These are about 7 inches long. Their function is not known, but they are usually filled with soft, undigested feed.

The cloaca is an enlarged part found where the large intestine joins the vent. Feces from the large intestine are passed out of the body through the vent. Eggs from the oviduct and urine from the kidneys also pass out through the vent.

ABSORPTION OF FEED

Most absorption of digested feed takes place in the small intestine. Some feed is also absorbed from the large intestine. Feed is not broken down enough to be absorbed in the mouth or esophagus. In ruminants, some fatty acids are absorbed from the rumen. The stomach tissue of nonruminants is not suited for absorption.

Villi, the millions of small finger-shaped projections on the wall of the intestine, are the key to absorption because they greatly increase the surface area of the intestine. Each villus (singular of villi) has a network of blood capillaries and a lymph vessel through which nutrients enter the bloodstream.

Digested protein is absorbed in the form of amino acids; some sodium must be present for absorption to occur properly. Digested carbohydrates (starches and sugars) are present as the monosaccharides (simple sugars) glucose, fructose, and galactose. ATP supplies energy for the absorption of monosaccharides and fatty acids. Sodium must also be present for monosaccharide absorption. As the substances are absorbed by the blood capillaries in the villi, they pass through the liver and then into the blood.

Digested fats, in the form of soaps and glycerol, undergo a slightly different process. They are formed again into fats and absorbed by the lymph vessel in the

AINTAINING POULTRY HEALTH

ro[illegible] of preventive management is the best way to control poultry diseases d parasites. Such a program involves sanitation, good management, vaccina-n, and control of disease outbreaks (Figure 37-1).

Figure 37-1 Chick receiving vaccine for coccidia. *Photo by Keith Weller. Courtesy of U.S. Department of Agriculture.*

Seniors only Poultry Diseases

nitation

ultry houses should be completely cleaned and disinfected before new birds moved in. The following steps will result in a clean house.

1. Take all movable equipment outside of the house. Clean off the manure, and wash and disinfect the equipment. Expose the equipment to sunlight.
2. Clean all of the manure and litter out of the house.
3. Sweep down the walls and ceilings.
4. Scrape and brush the floor clean.
5. Scrub and hose the inside and outside of the house using high pressure. A portable steam cleaner can be used for this operation.
6. Spray the inside of the house with an approved disinfectant. Spray should be applied to all the surfaces of the walls, ceiling, and floor. Do not spray the disinfectant into waterers or feeders. Chlorine, iodine, or quaternary ammonium are good disinfectants for smooth surfaces such as the walls and ceiling. Cresol, phenol, or coal tar-type disinfectants are best for floors, posts, and foundations.
7. Use new, clean, dry, nondusty litter on the floor.
8. Leave the house empty for 2 weeks to break disease cycles.
9. [illegible]k the door to prevent people from entering and contaminating the clean house.

Insofar as possible, do not allow visitors to enter poultry houses, pens, and ards. Clean coveralls and disinfected rubber footwear should be worn by nyone who must enter the poultry area. Place a foot pan with disinfectant in t at the door, to be used before entering. Replace the disinfectant in the pan frequently.

Use only clean and disinfected equipment. Be cautious about allowing used poultry crates, egg cases, and feed bags to be brought onto the farm. These can spread diseases.

All dead birds must be disposed of promptly. Use of incinerators, composting, or deep burying are recommended for disposal of dead birds. Be sure that disposal methods meet Environmental Protection Agency (EPA) regulations.

Dispose of manure by spreading it thinly on land that is not used for poultry. Do not put poultry on the land where the manure was spread for at least 4 years.

Eliminate places for pests, such as flies, to breed. Do not pile up manure outside of the poultry house. Control lice and mites inside of the house by using approved chemicals.

Other Health Management Practices

In addition to sanitation, a number of other management practices contribute to good flock health. Among these practices are the following.

1. [illegible]y poultry replacement stock from a reliable, disease-free source.
2. [illegible]se day-old chicks and poults.
3. If possible, keep birds of only one age on the farm. Use an all-in, all-out program. (Bring all the birds onto the farm at one time and remove them all at one time.)

Figure 37-2 Deformity caused by a deficiency of riboflavin. *Photo by Dr. Jean Sander, Department of Avian Medicine, University of Georgia.*

4. If it is necessary to keep birds of different ages, separate the flocks by at lea 40 feet (12 m).
5. Separate chickens and turkeys. It is best to have only one or the other o the farm.
6. Separate breeder flocks from other poultry. It is best not to have any othe poultry on the farm if a breeder flock is kept.
7. Keep pets and flying birds out of the poultry house. Flying birds can be kep out by screening the windows.
8. Provide the proper ventilation in the poultry house.
9. Control rats and mice. Use rat baits and traps as necessary. Make feed bin and storage rooms rat-proof. Eliminate places for rats and mice to breed b cleaning up trash and junk.
10. Feed balanced rations to prevent nutritional diseases (Figure 37-2). Make sure the feed is mixed properly. Provide plenty of fresh, clean water. Keep feeders and waterers clean.
11. Maintain good health records. Records should be kept of vaccinations, disease problems, and medicines used.

Vaccination

Vaccination is not a substitute for good flock health management, but it is helpful in controlling certain diseases. Vaccines are available for Newcastle disease, Marek's disease, infectious bronchitis, fowl pox, epidemic tremors, fowl cholera, laryngotracheitis, infectious bursal disease, erysipelas, and virus hepatitis. Vaccinations should be used only in areas where the disease is known to exist. Plan a vaccination program for the specific operation in a specific locality. Some vaccines for certain diseases can only be used with the permission of the state veterinarian. When planning a vaccination program, obtain help from a veterinarian, the Cooperative Extension Service, a hatchery, or feed dealer.

Vaccinations cause stress in poultry. Vaccinate only healthy birds. Read and follow all directions on the vaccine.

Several methods may be used to vaccinate poultry. Individual bird vaccinations are given by injection, intranasally, intraocularly, or through the wing web. **Intranasal vaccination** is placement of the vaccine directly into the nose opening. **Intraocular vaccination** is placement of the vaccine directly into the eye. **Wing web vaccination** is the process of injecting the vaccine into the skin on the underside of the wing web at the elbow. A grooved, double needle instrument is used for wing web vaccination.

Flock treatments are given in the water, by spray, or dust. The method used depends on the disease to be controlled. Individual vaccination causes more stress on the birds than flock treatments. Vaccinations for some diseases can be given in more than one way.

Controlling Disease Outbreaks

It is better to prevent a disease outbreak than to try to control it once it has occurred. Following the sanitation, management, and vaccination suggestions discussed earlier in this chapter will help the poultry producer prevent disease outbreaks from occurring.

The poultry flock should be checked daily for signs of disease. A sudden drop in feed and water consumption is often a sign of health problems. Watch the birds to see how they are eating and drinking. If more than 1 percent of the flock is sick, a disease is probably present. Death rate is another sign of disease. During the first 3 weeks, the normal death rate for chicks is about 2 percent. For turkeys, it is about 3 percent. After 3 weeks of age, the death rate should not

be more than 1 percent per month. A sudden increase in the death rate is an indication of disease.

Most diseases can be accurately diagnosed only in a laboratory. Very few can be accurately diagnosed on the farm. The producer should use the services of a veterinarian or the state diagnostic laboratory to determine which disease is causing the problem. The procedure for collecting needed information and specimens is specified by the laboratory. This procedure should be carefully followed. The recommendations of the veterinarian or laboratory for control of the disease must also be followed for best results.

DISEASES AND DISORDERS

The list of diseases and disorders that affect poultry is extensive. Because of space limitations, only brief descriptions are included in this chapter. Positive diagnosis and recommendations for treatment should be obtained from a veterinarian or diagnostic laboratory.

Amyloidosis

Amyloidosis, also called "wooden liver disease," is a common disease of adult ducks. The liver becomes hard and fluids accumulate within the body cavity. The cause of the condition is unknown. Death rate may be as high as 10 percent. There is no known cure.

Aortic Rupture

Aortic rupture affects mainly male turkeys between the ages of 8 and 20 weeks. The exact cause is not known, but the disease seems to be related to a high intake of energy feeds. An artery ruptures and the bird bleeds to death internally. Affected birds, which appear to be in good condition, die suddenly. Aortic rupture is prevented by feeding a lower-energy diet and by using a continuous feeding of tranquilizers at a low level.

Arthritis/Synovitis

The *arthritis/synovitis syndrome* is an inflammation of the joints and synovial membranes. The *synovial membrane* is a thin, pliable structure surrounding a joint. The membrane secretes **synovia**, which is a transparent lubricating fluid. The causes include injury, diet, and infection. The three most common forms are infectious synovitis, staphylococci arthritis, and viral arthritis.

Infectious synovitis is caused by a bacterium. It affects chickens and turkeys. The birds become lame, lose weight, and usually have diarrhea. Chickens show swelling of the foot pads and shanks. Turkeys show swelling of the feet and hocks. Death loss from this disease is low. Prevention is through good sanitation, and treatment involves the use of antibiotics.

Staphylococci arthritis is also caused by a bacterium. Affected birds have swollen joints and diarrhea, and show signs of depression. The acute form causes death. Good management helps to prevent the disease. Treatment is with antibiotics.

Viral arthritis is caused by a virus. The birds become lame and show a slow rate of gain. The disease affects only chickens. There is no treatment for the disease.

Aspergillosis (Brooder Pneumonia)

Aspergillosis is caused by a fungus or mold. It affects chickens, ducks, and turkeys. The acute form occurs in young birds and results in a high death rate. A chronic form affects older birds. The symptoms in young birds include loss of appetite,

Figure 37-3 Avian pox is caused by a virus that can affect turkeys, chickens, and other birds. *Photo by Dr. Jean Sander, Department of Avian Medicine, University of Georgia.*

gasping, sleepiness, convulsions, and death. Older birds show a loss of appetite, gasping, and loss of weight. The disease is prevented by using litter that is free of mold. There is no treatment.

Avian Influenza

Avian influenza is caused by several viruses. It affects mainly turkeys and chickens. The birds cough, sneeze, and lose weight. Death rate is low. Good management helps in prevention. Treatment with antibiotics may help reduce losses.

Avian Leukosis

Avian leukosis is a complex of diseases caused by viruses. The most common forms are lymphoid leukosis and Marek's disease. Lymphoid leukosis affects both turkeys and chickens.

Lymphoid leukosis usually affects birds over 16 weeks of age. Sometimes the birds die without showing any symptoms of disease. Usual symptoms are loss of weight, loss of appetite, and diarrhea. The bone form of the disease affects younger birds and is a serious problem in the broiler industry. The affected birds show lameness. Prevention involves the use of resistant strains of birds, sanitation in the hatchery, and keeping the flock isolated. There is no treatment for the disease.

Marek's disease affects mainly young chickens, although it may occur in older birds. It is caused by a virus different from the one that causes lymphoid leukosis. The main symptom is lameness or paralysis of one or both legs. The disease is prevented by vaccination at hatching time. There is no treatment.

Avian Pox (Fowl Pox)

Avian pox is caused by a virus and affects turkeys, chickens, and other birds. Symptoms include wart-like scabs around the head and comb (Figure 37-3 and Figure 37-4), yellow cankers in the mouth and eyes, and, in turkeys, yellowish-white cankers in the throat. Young birds have a slower rate of growth. Egg production in layers is reduced. The disease is prevented by vaccination. There is no treatment.

Avian Vibrionic Hepatitis

Avian vibrionic hepatitis is caused by a bacteria. It affects chickens in either an acute or chronic form. The acute form causes a higher death loss. The birds show loss of weight, diarrhea, listlessness, shrunken comb, and drop in egg production. Good management and sanitation help in prevention. Drugs are used for treatment.

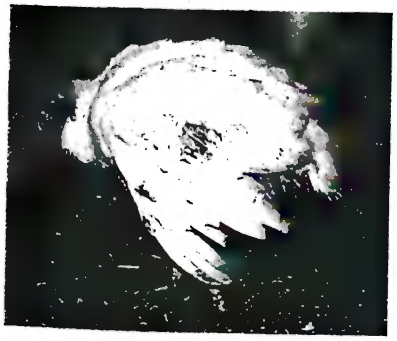

Figure 37-4 A turkey suffering from fowl pox. The growth rate is slowed and egg production is reduced. *Photo by Dr. Jean Sander, Department of Avian Medicine, University of Georgia.*

Blackhead

Blackhead is caused by a protozoan parasite. It affects both chickens and turkeys, but is more serious in turkeys. The disease affects mainly young birds between 6 and 16 weeks of age. Symptoms include droopiness, loss of appetite, darkening of the head, and a watery, yellow diarrhea. Death losses are usually low but may be as high as 90 percent if the disease is not controlled. Diseased chickens often show no signs of the disease.

Brooding on wire or slatted floors helps in prevention. Never house chicken and turkey flocks together. Rotate pastures to prevent the disease. It may be necessary to continuously feed a preventative drug at low levels in the drinking water.

Bluecomb (Transmissible Enteritis; Mud Fever)

Bluecomb in turkeys is caused by a virus and affects all ages. Symptoms in poults include droopiness, dehydration, and gaseous, watery diarrhea. Death loss in poults can be as much as 100 percent. Older birds show a loss of appetite, loss in body weight, diarrhea, and a blueness of the head. Death loss in older birds is not high. Birds that recover may be carriers of the disease.

Sanitation practices help to prevent the disease. If an outbreak has occurred, empty the house and allow it to remain vacant for at least 30 days. Treat by adding antibiotics and molasses to the drinking water. Use 1 pint (0.47 liters) of molasses to 5 gallons (19 liters) of water for 1 day. Follow this treatment with a broad-spectrum antibiotic in the feed or drinking water for 5 to 7 days.

Bluecomb (Pullet Disease)

Bluecomb in chickens is not the same disease as bluecomb in turkeys. The cause is not known but is believed to be a virus. Symptoms include a drop in egg production, loss of appetite, loss of weight, diarrhea, and a darkening of the comb. The crop may become compacted with feed. Sanitation and good management help to prevent the disease. Treatment is with a broad-spectrum antibiotic.

Bumblefoot

Bumblefoot is a disease of the feet that affects turkeys. Hard bumblefoot appears as a hard swelling in the center of the foot. Soft bumblefoot occurs as soft-centered abscesses on the sole of the foot and especially the toes. Bumblefoot can cause lameness and slow growth rate. Male turkeys raised on hard floors and roosts are more likely to be affected by hard bumblefoot. Both male and female turkeys raised on muddy, dirty range or litter are more likely to get soft bumblefoot. Management that eliminates these conditions helps in prevention. There is no treatment.

Botulism (Limberneck; Food Poisoning)

Botulism is the result of the bird eating decayed material that contains a toxin (poison) produced by a bacterium. Symptoms include weakness, trembling, paralysis, loose feathers, and dull, closed eyes. Affected birds usually die. Prevention is achieved by eliminating sources of decayed material that might be eaten by the birds. Contaminated water is often a source of the toxin. Be sure that the water supply is clean. Isolate sick birds. An antitoxin may be used to save valuable individual birds.

Cage Fatigue

Cage fatigue appears to be a nutritional problem involving minerals. It commonly affects young pullets that are producing eggs at a high rate. The disease is not common if the diet is properly balanced. The main symptom is paralysis. Proper diet prevents the disease. Treatment is usually not practical.

Coccidiosis

Coccidiosis is caused by a number of protozoan parasites called coccidia (Figure 37-5). Different species of coccidia affect different kinds of poultry. Birds 3 to 8 weeks of age are most frequently affected by this disease. Symptoms include droopiness, huddling of birds, loss of appetite, loss of weight, and

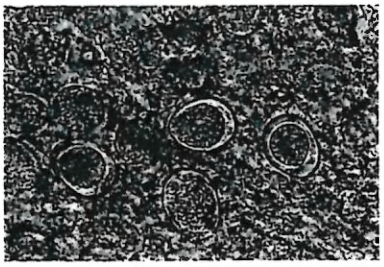

Figure 37-5 Coccidiosis is caused by protozoan parasites called coccidia. *Photo by Dr. Jean Sander, Department of Avian Medicine, University of Georgia.*

Treatment is with drugs or a bacterin. Vaccination should be done only if the ase is present in the area.

Fatty Liver Syndrome

The cause of *fatty liver syndrome* is unknown. It affects mainly caged birds on high-energy diets. Symptoms include a drop in egg production, diarrhea, and anemia. Dead birds may be found when no other symptoms have been noticed. Treatment and control measures involve diet adjustment. A nutrition specialist should be consulted.

Fowl Cholera

Fowl cholera is caused by bacteria. It may occur in acute or chronic form. Symptoms of the acute form include purple color of the comb, difficult breathing, watery diarrhea, weakness, droopiness, loss of appetite, loss of weight, lameness, and sudden death. The chronic form shows swollen wattles, earlobes, and joints. Layers will show a drop in egg production. Sanitation helps to prevent the disease. Vaccinate with bacterins in areas where the disease is present. Drugs are used for treatment.

Hemorrhagic Anemia Syndrome

Hemorrhagic anemia syndrome affects chickens of all ages, but mainly those between 4 and 12 weeks of age. Its cause is unknown. Symptoms include loss of weight, diarrhea, weakness, and anemia. Death losses may be high with the acute form. Sulfa drugs and antibiotics may make the condition worse. Addition ver solubles to the ration has resulted in some improvement.

Hemorrhagic Enteritis

Hemorrhagic enteritis can occur in turkeys from 3 weeks to 6 months of age, but is more common in older birds. Its cause is unknown. Sudden death of several birds on range is often the only symptom. A change in the ration and moving birds to new range may help in treatment. A serum made from the blood of birds that have recovered can be injected to treat the flock.

Hexamitiasis

Hexamitiasis is caused by a protozoan parasite. It does not affect chickens. Turkeys are affected up to 10 weeks of age. Poults huddle together and become listless. There is a rapid weight loss with a watery, foamy, yellowish diarrhea. Sanitation and brooding on wire or slat floors help to prevent the disease. Broad-spectrum antibiotics have been used with some success in treatment.

Inclusion Body Hepatitis

Inclusion body hepatitis is caused by a virus. The disease is common in commercial chicken flocks. The sudden death of chickens in the flock is often the only symptom. Diseased chickens show symptoms of anemia, yellowing of the skin, depression, and weakness. Death follows these symptoms fairly quickly. There is no vaccine or treatment.

Infectious Bronchitis

Infectious bronchitis is caused by a virus and affects only chickens. Symptoms include difficult breathing, sneezing, gasping, and nasal discharge. Egg production of layers is reduced. Death rate of young chicks is high. Older birds also show loss of appetite and slower growth. Prevention is by vaccination, isolation of flocks, and sanitation. There is no treatment.

Infectious Bursal Disease (Gumboro)

Infectious bursal disease is caused by a virus. It affects young chickens. Symptoms include fever (in the early stages), ruffled feathers, loss of appetite, difficulty in defecation, slight tremors, and dehydration. Birds do not want to move and are unsteady when walking. Vent picking often occurs. Death rate is high. Prevention is by vaccination. There is no treatment.

Infectious Coryza

Infectious coryza is caused by a bacterium. It affects mainly older chickens. Symptoms include swelling around the eyes and wattles, nasal discharge, and swollen sinuses. Egg production in layers is reduced. Good sanitation and management will help in prevention. Drugs are used for treatment.

Laryngotracheitis

Laryngotracheitis is caused by a virus. It affects mainly older chickens. Symptoms include difficult breathing, coughing, and sneezing. Death rate is high. Egg production in layers is reduced. Vaccination is used in areas where the disease exists. The use of the vaccine is restricted. There is no treatment.

Leucocytozoonosis

Leucocytozoonosis is caused by a protozoan parasite. It affects mainly turkey poults and ducklings. Symptoms include lack of appetite, droopiness, weakness, thirst, and difficult breathing. The death rate is high. Sanitation, isolation of brooding, and good management help in prevention. There is no treatment.

Muscle Degeneration

The cause of *muscle degeneration* is not known. Breeding tom turkeys are affected. It usually occurs after stimulatory lighting is started. Symptoms include neck paralysis and, sometimes, leg paralysis. Birds usually recover after a few days of forced feeding.

Mycoplasmosis

Three species of the bacterium *Mycoplasma* cause respiratory diseases in poultry. These diseases include chronic respiratory disease/air sac syndrome in chickens, infectious sinusitis in turkeys, airsacculitis in turkeys, and infectious synovitis in chickens and turkeys. Infectious synovitis is discussed earlier in this chapter.

Symptoms of *chronic respiratory disease* include nasal discharge, coughing, sneezing, swelling below the eyes, loss of weight, and drop in egg production. Isolation, sanitation, good management, and avoiding stress will help prevent the disease. Treatment is with antibiotics.

Symptoms of *infectious sinusitis* include watery eyes, nasal discharge, swollen sinuses, coughing, and difficult breathing. Prevention and treatment is the same as for chronic respiratory disease.

While there are a number of causes of airsacculitis in turkeys, the bacterium *Mycoplasma meleagridis* is one of the main ones. Breeding flocks as well as young poults may be affected. Yellow deposits are found on the air sacs and sometimes on the lungs of infected birds. Prevention is achieved by treating hatching eggs with antibiotic solutions. There are no drug preventions or controls.

Mycotoxicosis

Fungi or mold growing on feed or litter produce toxins. If these toxins are taken in by the bird *mycotoxicosis* can result. A variety of symptoms may indicate the presence of the disease. Growth rate may be slower, egg production may be

reduced, the hatchability of eggs may be lowered, or the bird may die. The con- ion is best prevented by storing feeds in such a way that the mold does not ow. Do not feed moldy feed or use moldy litter.

Necrotic Enteritis

Necrotic enteritis appears to be caused by toxins produced by bacteria. Sudden death of healthy birds is one of the first indications of the disease. Death rate in a flock may be high. Birds that do not die have slower growth rates and poor feed conversion. Drugs are used in prevention and treatment. Controlling coccidiosis helps to prevent the disease.

Newcastle Disease

Newcastle disease occurs in several forms, each caused by a different virus. Young birds show both breathing problems and signs of nervousness, including difficult breathing, sneezing, gasping, paralysis, and tremors.

Adults show breathing problems, and egg production of layers is reduced. Sanitation and vaccination are the methods of prevention. There is no treatment.

New Duck Disease (Infectious Serositis)

New duck disease is caused by bacteria. It is one of the most serious diseases affecting ducklings. Symptoms include sneezing and loss of balance. The death rate is high. Antibiotics are used in treatment.

Omphalitis

phalitis appears to be caused by several bacteria. It affects young birds. Symptoms include loss of appetite, diarrhea, and drowsiness. The death rate is high. Good management and sanitation in the hatchery are necessary for prevention. Broad-spectrum antibiotics are used for treatment.

Ornithosis

Ornithosis is caused by a bacterium. In humans it is called *parrot fever*. The disease is not a major problem in the poultry industry, but workers in turkey-processing plants have contracted the disease from infected birds. Symptoms in turkeys include coughing, sneezing, and a yellow diarrhea. Isolation of flocks may help in prevention. Antibiotics are used in treating the disease. Affected flocks are quarantined and treated under supervision. Flocks that have had the disease are not kept for breeding purposes.

Poisoning

Birds may be poisoned by eating or drinking any toxic materials. Sprays, disinfectants, nitrates, pesticides, and poisonous plants are a few of the sources of poisoning. Convulsions are a common symptom of poisoning. Birds raised on range are more likely to be poisoned than those raised in confinement. Prevent birds from eating poisonous substances.

Round Heart Disease

The exact cause of *round heart disease* is unknown. It may be the result of a s, or heredity, or both. It affects mainly young male chickens and turkeys. Stress conditions appear to increase the chances of the disease appearing. The heart becomes enlarged, rounded, and flabby. The liver may be yellow in color. The condition can be prevented by making sure there is adequate heat during brooding and that only disease-free stock is purchased. There is no treatment.

Salmonella and Paracolon Infections

Salmonella and *paracolon* infections are caused by a number of bacteria. Four diseases of poultry that are caused by these bacteria include pullorum disease, fowl typhoid, paratyphoid, and paracolon infections.

Symptoms of *pullorum* include white diarrhea, droopiness, and chilling. It affects mainly young birds, and death losses may be very high. Prevent by getting stock from pullorum-free hatcheries. Treatment is not very effective, and the recovered birds become carriers.

Fowl typhoid affects mainly birds 12 weeks of age and older. Symptoms include loss of appetite, thirst, pale comb and wattles, listlessness, yellow or green diarrhea, and sudden death. The death rate may be high. Prevent by securing stock from disease-free flocks and practicing good sanitation on the farm.

Paratyphoid affects mainly young birds. The symptoms are similar to pullorum, as is the death rate. Sanitation in the hatchery and on the farm helps to prevent the disease. Drugs may be used in treatment to lower the death loss.

Paracolon infections are generally known as *Arizona infections*. A large number of bacteria are involved. The symptoms, control, and treatment are similar to paratyphoid. Laboratory diagnosis is needed to identify the disease.

Trichomoniasis

Trichomoniasis is caused by a protozoan parasite. Turkeys are affected more often than other poultry. Losses are highest among young and growing birds. Symptoms include loss of appetite, loss of weight, and droopiness. Sanitation is the best way to prevent the disease. Affected birds may be treated with copper sulfate added to the drinking water.

Ulcerative Enteritis

The exact cause of *ulcerative enteritis* is not known, but it is suspected that a bacterium is involved. The acute form may cause sudden death. Symptoms of the chronic form include ruffled feathers, humped up posture, and listlessness. A white diarrhea may be present. Antibiotics are used for the prevention and treatment of the disease.

EXTERNAL PARASITES

A number of external parasites are problems in poultry production. Included are chicken mites, northern fowl mites, scaly leg mites, several species of lice, fowl ticks, flies, fleas, and bedbugs. The most serious of these parasites are mites and lice.

Chicken Mite

The chicken mite is also called the red mite or the roost mite. The chicken mite sucks blood from the birds. Egg production drops and young chickens may die. During the day the chicken mite hides in cracks and crevices. The life cycle of the common chicken mite is shown in Figure 37-7.

Northern Fowl Mite

The northern fowl mite is a bloodsucker. It spends all of its life cycle on the bird. Sparrows carry these mites and should be kept out of the poultry house. This mite also causes lower egg production and may cause death.

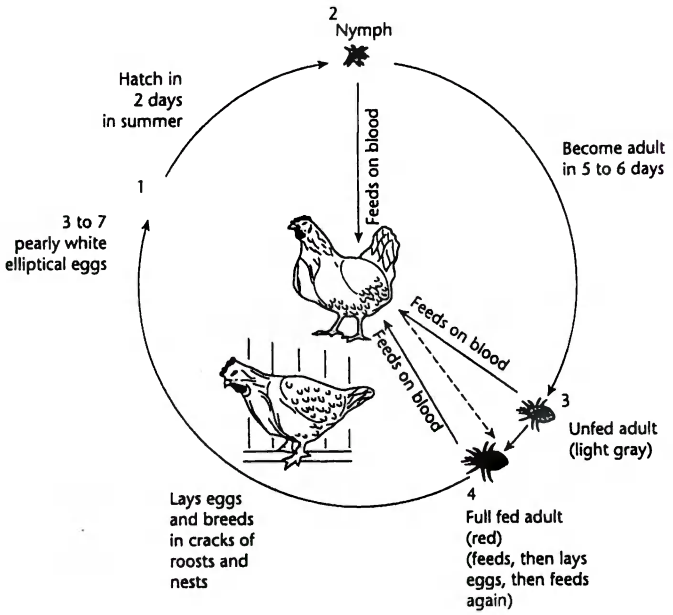

Figure 37-7 Life cycle of the common chicken mite. *Courtesy of University of Illinois at Urbana-Champaign.*

Figure 37-8 Poultry body louse. *Courtesy of University of Illinois at Urbana-Champaign.*

Scaly Leg Mite

This mite causes scaly leg. It lives under the scales on the feet and legs of the bird. .vy infestations cause a rough appearance and enlargement of the legs.

Poultry Lice

The most common type of poultry louse is the body louse (Figure 37-8). Other lice that attack poultry are the shaft louse (Figure 37-9), fluff louse, wing louse, and the head louse (Figure 37-10). All of these are chewing lice. Infected birds lose weight, egg production drops, and young birds may die.

Figure 37-9 Poultry shaft louse. *Courtesy of University of Illinois at Urbana-Champaign.*

Fowl Tick

The fowl tick is a dark-colored bloodsucker. It hides during the day in cracks and crevices.

Fleas and Bedbugs

Fleas and bedbugs are bloodsuckers, and may become a problem in the poultry house. Fleas stay on the birds. Bedbugs feed on the bird at night and hide in cracks and crevices during the day.

Figure 37-10 Poultry head louse. *Courtesy of University of Illinois at Urbana-Champaign.*

Flies

Flies do not directly attack poultry. However, they may become a nuisance around the poultry house. Heavy fly infestations may cause problems with neighbors.

Control of External Parasites

The basis of a control program is the sanitation procedures outlined earlier in chapter. Insecticides may be used to control these parasites. Since recommendations and regulations on the use of insecticides change from time to time, no specific ones are listed here. Check with poultry specialists, veterinarians, or the Cooperative Extension Service for current recommendations on the use of insecticides.

INTERNAL PARASITES

Internal parasites that affect poultry include large roundworms, cropworms (capillaria), cecal worms, tapeworms, flukes, gapeworms, and gizzard worms. The life cycles of some of these parasites are illustrated in Figures 37-11 through 37-15. Worm infestations generally cause slow growth and lower production. Drugs are available for the treatment of some of these worms. There is no known specific treatment for tapeworms.

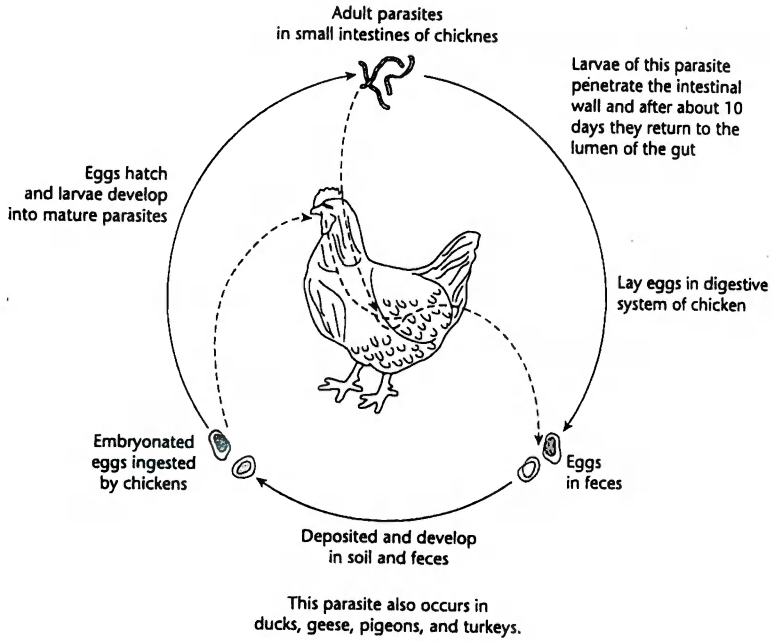

Figure 37-11 Life cycle of large roundworm in poultry. Large roundworms spend their entire life cycle in the small intestine. The eggs must pass through a period of development before they can infect another fowl. *Courtesy of University of Illinois at Urbana-Champaign.*

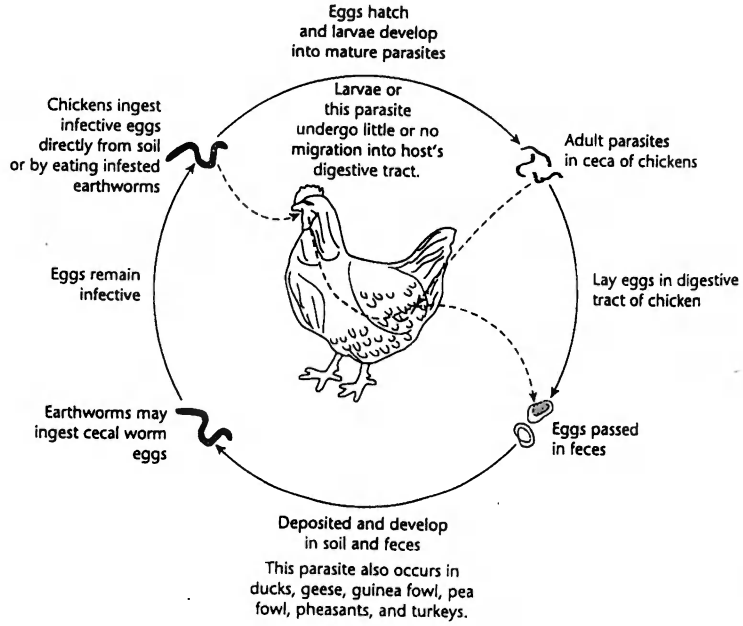

Figure 37-12 Life cycle of cecal worm in poultry. Cecal worms are found only in the ceca of chickens. Eggs must pass through a period of 7 to 12 days before infesting another fowl. *Courtesy of University of Illinois at Urbana-Champaign.*

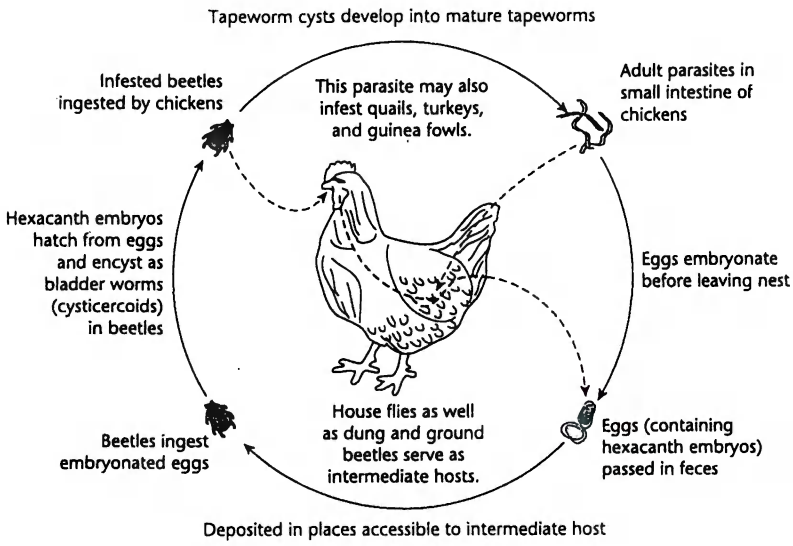

Figure 37-13 Life cycle of tapeworm in poultry. Tapeworms have an indirect life cycle—the eggs must develop in an intermediate host such as flies, beetles, slugs, earthworms, or grasshoppers. *Courtesy of University of Illinois at Urbana-Champaign.*

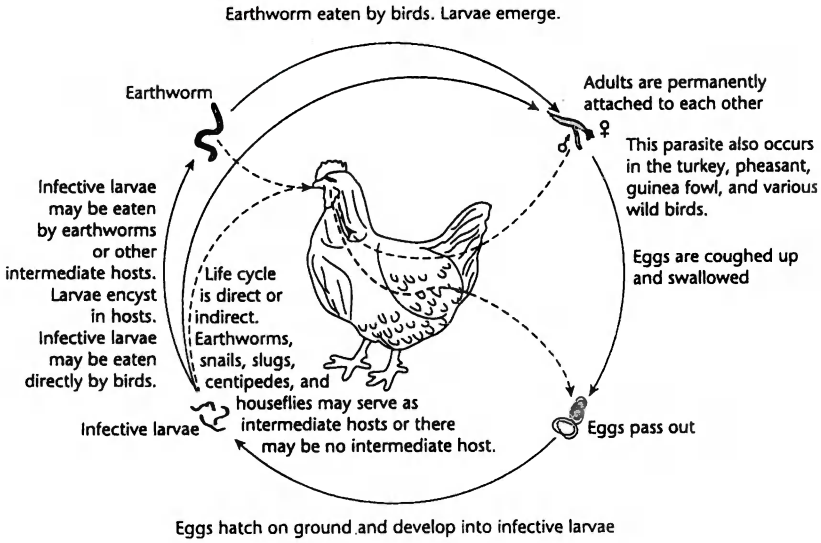

Figure 37-14 Life cycle of gapeworm in poultry. Gapeworms attach themselves to the lining of the trachea. Eggs are present in discharges coughed up by the bird or in the feces. *Courtesy of University of Illinois at Urbana-Champaign.*

Control of worms is best achieved by strict sanitation. Rotation of range also helps prevent infestation. Controlling insects and keeping wild birds out of poultry houses is important in control. Birds raised in confinement and on wire or slat floors seldom have serious infestations of worms. Good management indicates that the flock should be checked periodically for the presence of worms. Current recommendations on the use of drugs for worm control may be secured from poultry specialists, veterinarians, or the Cooperative Extension Service.

SUMMARY

The best way to control poultry diseases and parasites is through a program of prevention. Prevention involves sanitation, good management, vaccination, and control of disease outbreaks.

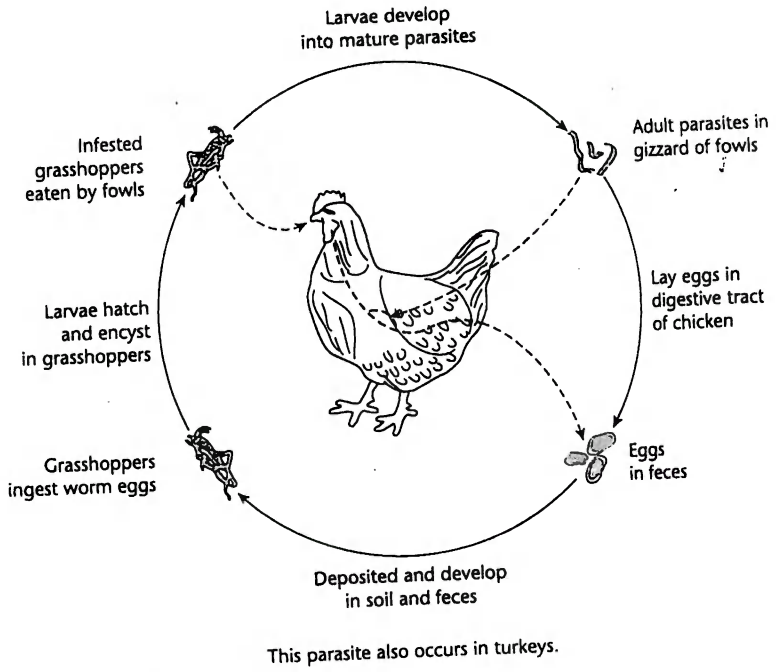

Figure 37-15 Life cycle of gizzard worms in poultry. Gizzard worms have an indirect life cycle. That is, the eggs must develop in an intermediate host such as grasshopper, weevils, and certain species of beetles. *Courtesy of University of Illinois at Urbana-Champaign.*

Sanitation requires complete cleaning and disinfecting of poultry houses and equipment. Isolation of the flock and proper disposal of dead birds and manure are other sanitation practices that should be followed.

All poultry replacement stock should be secured from reliable, disease-free sources. It is best to keep only birds of the same age on the farm. Chickens and turkeys should not be mixed. Feed balanced rations and keep good health records.

Vaccination can be used to prevent some poultry diseases. However, it is not a substitute for good sanitation or management practices. A vaccination program should be planned for a particular operation in a specific area.

The poultry flock should be checked daily for signs of disease. A drop in production or an increase in the death rate may indicate the presence of a disease. Accurate diagnosis of poultry diseases is best done in a laboratory.

Many diseases affect poultry. A large number have similar symptoms and effects. Some affect all kinds of poultry, while others affect only some species.

Mites and lice are the main external parasites that affect poultry. Sanitation and the proper use of insecticides can keep these under control.

The main internal parasites of poultry are worms. Birds raised in confinement or on wire or slat floors have fewer internal parasite problems.

Student Learning Activities

1. Give an oral report on control measures for diseases and parasites or on an individual disease or parasite.
2. Ask a veterinarian to speak to the class on control of poultry diseases and parasites.
3. Survey local poultry producers to determine the disease and parasite problems that are present and the control measures that are used.

2024 Poultry Skillathon Juniors (Age 8-11)

Name_____Age (As of Jan 1st)_____

4-H Club Name_____

Station	Points Available	Points Scored
Parts (1 bird-10 parts), 2pts	20	
Feed (7 feeds), 2pts	14	
Breeds (10 breeds), 2pts	20	
Medication Label (9 Parts), 2 pts	18	
Comb Identification (6 Parts), 2 pts	12	
Record Book	10	
Thank You Note	10	
Brooder Arrangement	5	
Total		

Tie Breaker Multiple Choice/True/False Quiz

2024 Poultry Skillathon Intermediate (Age 12-14)

Name_____Age (As of Jan 1st)_____

4-H Club Name_____

Station	Points Available	Points Scored
Parts (2 birds-10 parts) 2pt	40	
Thank You Note	10	
Breeds (10 breeds) 2pts	20	
Medication Label (9 labels) 2pts	148	
Parts of Feather (6 parts) 2pts	12	
Record Book	10	
Feeds (7 feeds) 2pts	14	
Exterior Grading of Eggs-7 Eggs, 2pt	14	
Total		

Tie Breaker Multiple Choice/True/False Quiz

2024 Poultry Skillathon Seniors (age 15 and Up)

Name _____

Club Name _____

Age _____

Station	Points Available	Points Scored
Parts (2 birds-15 parts ea.) 2pts	60	
Breeds (10 breeds) 2pts	20	
Thank You Note	10	
Digestive System & Questions-10 parts/5 Questions-2 pts	30	
Feeds (7 Feeds) 2pts	14	
Parts of Egg 11 parts, 2 pts	22	
Exterior Egg Grading-7 eggs, 2pts		
Poultry Diseases & Symptons-5 Questions-2 pts	10	
Record Book	10	
Total		

Tie Breaker Multiple Choice/True/False Quiz