POULTRY PROJECT AREA GUIDE

INTERMEDIATE

Author:
Wheeler McCulloch, Agent and Director, UT Extension Giles County

Reviewed for Pedagogy:
Lynne Middleton, State 4-H Curriculum Specialist, Interim, 4-H Youth Development
Jennifer Richards, Extension Curriculum Specialist, Department of Agricultural Leadership, Education, and Communication

Activity 1 – Understanding Production

Project Outcomes:

- Describe the physical characteristics that separate a table egg layer from a broiler.
- Differentiate between breeds used for residential and commercial production.
- Compare and contrast the segments of poultry production: primary breeders, broiler breeders, hatchery, grow out farms, processing plants, table egg layers and residential/backyard

The poultry industry can be broken into two separate segments: commercial poultry and residential/backyard poultry. Commercial poultry production is a vertically integrated production system that relies on primary breeder companies, commercial poultry companies and contract growers, and all working together. Primary breeder companies supply genetic stock (day-old male and female chicks) to commercial poultry companies. Commercial poultry companies (known as integrators) own the hatcheries, feed mills and processing plants and contract out the growing of the birds to local growers that own the farms and production houses for pullets, breeders and broilers. Due to this style of operation, poultry has become one of the most readily available and cheapest sources of protein available. Producers operating as contract growers of a commercial poultry farm operate one or more types of facilities.

Pullet Farms are the first stage of the producer's interaction with commercial poultry. Pullet growers receive day-old chicks from primary breeder companies and raise them for approximately 20 weeks until they are ready to be transferred to a breeder farm.

Breeder Farms, also known as **parent farms,** house birds from pullet farms for approximately 40-45 weeks for hatching egg production. Breeder growers will receive hens and roosters at approximately 20 weeks of age and manage them in order to produce hatching eggs that will hatch into broilers.

Hatcheries will receive the eggs from breeder farms, incubate them and hatch them out into the chicks that will become broiler chickens for meat production.

Broiler Farms, or **grow out farms,** are responsible for taking the birds that enter the food supply and growing them to their intended market weight. Some birds are grown to large size (7 or more pounds), while some may be much smaller (4-5 pounds). Larger birds are generally intended for things like chicken fingers, nuggets, breast strips or patties, while smaller birds are sold for grocery store retail cuts, such as boneless breasts, leg quarters or whole rotisserie birds.

Photo of a broiler farm - Credit: Alabama Cooperative Extension System

Table egg layers are the other type of commercial poultry operation. These birds are raised to produce the eggs that you may buy in a grocery store. These eggs are produced by the White Leghorn breed, which produce the white eggs that consumers desire in the supermarket or grocery store. Other breeds will lay brown table eggs found in the grocery while still other breeds produce the free-range and organic eggs found in grocery stores

White Leghorn hen - Credit: Ideal Poultry

Now put into context what you have just learned. Based on the above descriptions and other information you may find while researching commercial poultry production (make sure to use reputable sources), write a paragraph describing the most interesting thing that you learned about commercial poultry operations.

_____

_____

_____

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Now that we have learned about commercial production, let's talk about backyard and residential flocks. Chickens raised in backyard flocks are generally done so for egg production. Raising birds to lay eggs and then marketing them can be a very inexpensive opportunity for a young person to learn how to run a business. There are also many different types of egg layers to choose from depending on the types of eggs one might wish to have available for themselves or to sell.

Using the Ideal Poultry website, research the following breeds and list the following facts: egg color, egg size and lay rate. Additionally, write where the breed originated from. Online resource: idealpoultry.com

Rhode Island Red

_____

_____

_____

_____

_____

Barred Rock

California White

Cream Legbar

Black Australorp

References:
New Farmer's Guide to the Commercial Broiler Industry: Poultry Husbandry and Biosecurity Basics: aces.edu/blog/topics/farm-management/new-farmers-guide-to-the-commercial-broiler-industry-poultry-husbandry-biosecurity-basics/#:~:text=The%20day%2Dto%2Dday%20work,the%20birds%20they%20are%20managing.
Commercial Poultry Industry: extension.psu.edu/commerical-poultry-industry

Activity 2 – Genetics

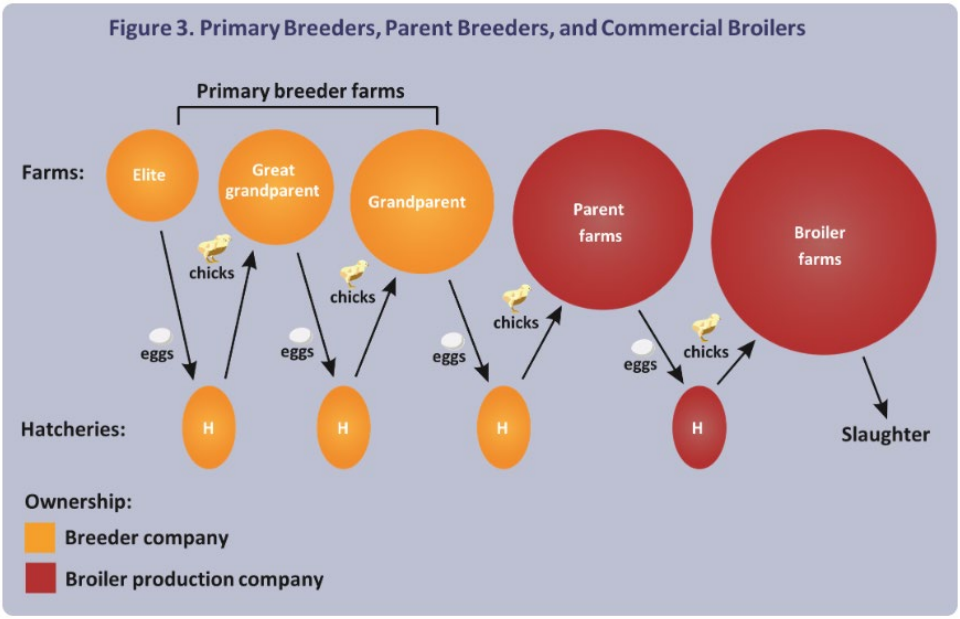
Project Outcomes:

- Describe pedigree, great grandparent, grandparent and parent flocks in the broiler industry
- Differentiate between genotype and phenotype and give examples of each
- Analyze and develop a biosecurity plan used to maintain poultry health

poultry.extension.org/articles/poultry-anatomy/poultry-genetics-an-introduction/

As you learned in the previous activity, primary breeders are large companies that own the genetics used in the broiler industry. Primary breeders increase the genetic potential for broiler chickens by breeding for traits that will improve production efficiency. They are looking to improve things such as feed conversion, growth rate and meat yield. Improvements in these areas mean lower costs of production and higher returns for the companies and poultry producers.

Genetic improvement is made by hatching eggs from the pedigree flocks to become great grandparent flocks. Their eggs are hatched and yield chicks for the grandparent flocks, which have improved genetics on both the male and female parent lines. Eggs from these grandparent flocks are then shipped to hatcheries to produce parent flocks, which will produce the eggs that will hatch into broiler chickens.



thepoultrysite.com/articles/fad-broilers-breeding-flocks

Think about some of the problems that could come out of this type of industry structure. How could biosecurity problems affect this structure?

When primary breeders are breeding for specific traits, they are choosing specific genotypes, or genetic makeups, to cross in order to create more desirable phenotypes, or physical or biochemical characteristics that are results of genotypes.

List two physical characteristics, or phenotypes, that you think breeders are working to develop in broiler chickens.

_____

_____

Think about some of the problems that could come out of this type of industry structure. How could biosecurity problems affect this structure?

_____

_____

Use this website to determine five keys to biosecurity and write them out to develop your own biosecurity plan.
extension.uga.edu/publications/detail.html?number=B1306&title=biosecurity-basics-for-poultry-growers

1. _____

   _____

   _____

2. _____

   _____

   _____

3. _____

   _____

   _____

4. _____

_____

_____

5. _____

_____

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Activity 3 – Reproduction

Project Outcomes:

- Define the following terms: follicle, stigma, testes, vas deferens and sperm
- Label the parts of the reproductive tracks and match them to gender: ovary, follicle, testes, vas deferens, epididymis, infundibulum, magnum, isthmus, uterus, vagina, cloaca and vent.
- Identify components of the egg including cuticle, chalaza, germinal disc, vitelline membrane, nucleus of pander, latebra, light and dark yolk

www2.ca.uky.edu/agcomm/pubs/ASC/ASC199/ASC199.pdf

In this activity, you will learn about the parts of the male and female reproductive systems. Begin by completing this lesson in Nearpod:
app.nearpod.com/presentation?pin=D841FC0F96C0DBE164DDBB8C2B38B195-1

Now that you have learned about the parts of the reproductive tracts and what they do, fill in the correct spots on the diagram below.

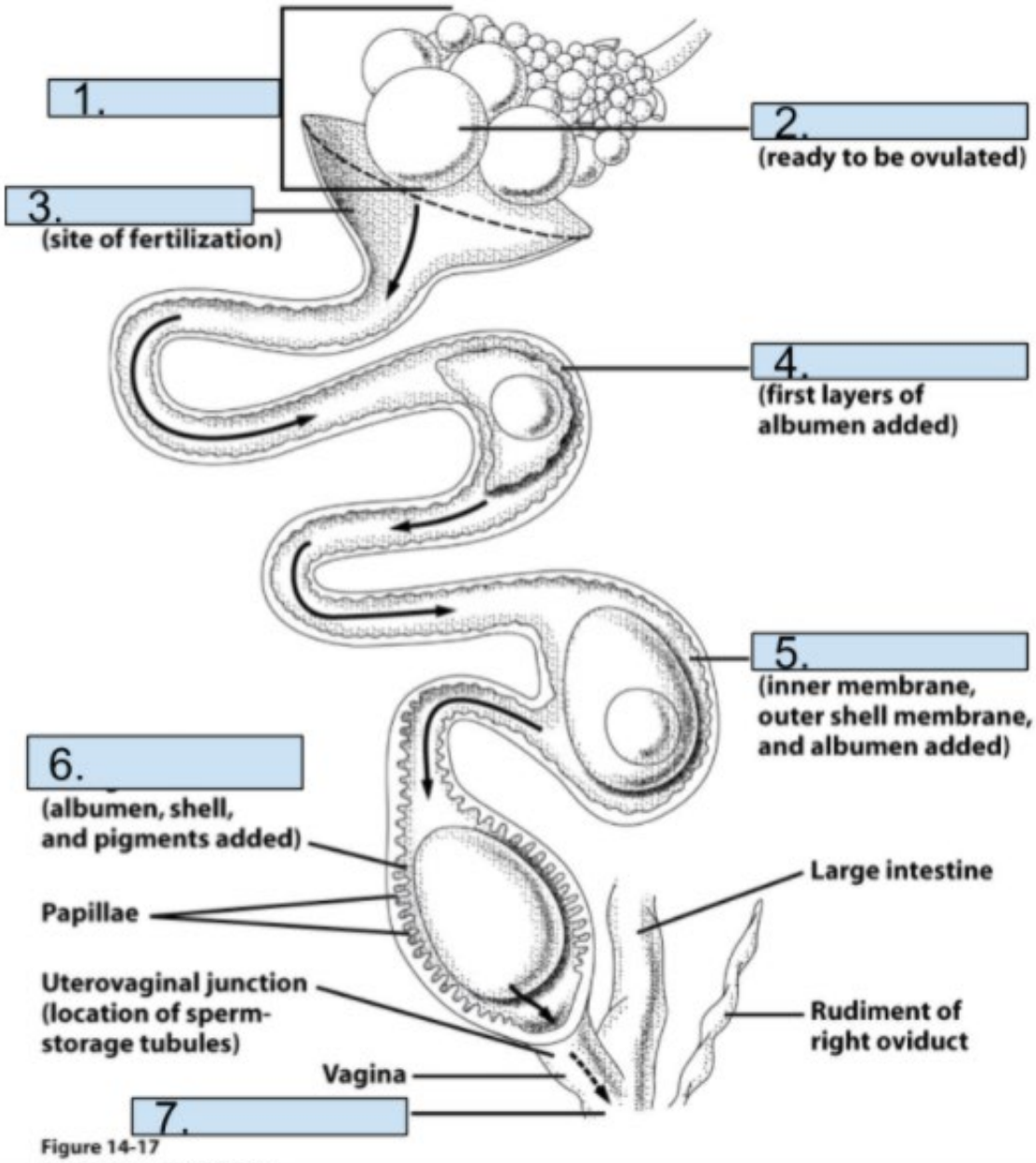


Figure 14-17
Ornithology, Third Edition

Answer Key

1. Ovary
2. Follicle
3. Infundibulum
4. Magnum
5. Isthmus
6. Shell Gland
7. Cloaca

Activity 4 – Understanding Embryology

Project Outcomes:

- Identify components of the egg including cuticle, chalaza, blastoderm, vitelline membrane, nucleus of pander, latebra, white and yellow yolk

geauga4h.org/poultry/egg_parts.htm

sites.ext.vt.edu/virtualfarm/poultry/poultry_eggparts.html#:%7E:text=The%20chalazae%20hold%20the%20yolk,female's%20genetic%20material%20is%20

In this activity, you will learn basic embryology of a poultry egg as well as how to evaluate an egg for possible flaws. Before you begin, think back to what you learned in the previous lesson about the formation of the egg and its yolk. Then, match the term to the definition.

Cuticle	Protective layer for the yolk formed in the magnum
Chalaza	Prevents bacteria from entering the egg, first line of defense against infection for a growing chick
Albumin	After the egg is laid and the egg cools, this is formed at the large end of the egg
Air Cell	Twisted strands of fibers that hold the yolk in the center of the egg.

Using this website from Geauga County Ohio 4-H, and the chart below, answer the following questions.
Online resource: geauga4h.org/poultry/egg_parts.htm

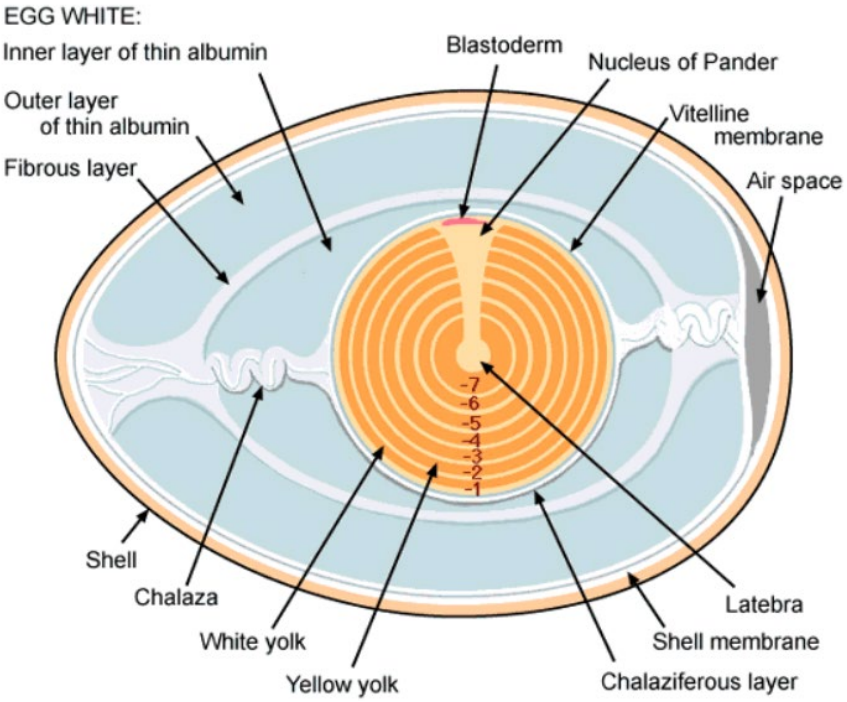


Image created by Janet Sinn-Hanlon for chickscope.beckman.uiuc.edu

1. In the diagram above, you can see that the yolk is developed in layers, white and yellow. Which type of yolk is usually developed during the day and contains more fat? _____ Which is usually developed at night containing more protein? _____

2. The _____ is a spherical mass of white yolk in the center of the yolk, connected to the _____ which is a column of white yolk where the embryo will develop. The earliest stage of embryo, which will eventually grow to become a chick is called the _____.

3. The _____ is what surrounds and protects the yolk. It is surrounded by the chalaziferous layer, which is twisted on both sides of the yolk forming the _____, which prevents the yolk from moving and touching the outside of the shell.

Answer Key

1. In the diagram above, you can see that the yolk is developed in layers, white and yellow. Which type of yolk is usually developed during the day and contains more fat? Yellow Which is usually developed at night containing more protein? White

2. The Latebra is a spherical mass of white yolk in the center of the yolk, connected to the Nucleus of Pander which is a column of white yolk where the embryo will develop. The earliest stage of embryo, which will eventually grow to become a chick is called the Blastoderm.

3. The Vitelline Membrane is what surrounds and protects the yolk. It is surrounded by the chalaziferous layer, which is twisted on both sides of the yolk forming the Chalaza, which prevents the yolk from moving and touching the outside of the shell.

Activity 5 – Incubating and Hatching

Project Outcomes:

- State the recommended temperatures and humidity levels in a hatchery setter and in a hatchery hatcher
- Demonstrate how to candle an egg
- Explain why the following management practices are conducted and identify the equipment used in poultry production: chick navel temperature, vent sexing and hatchery residue analysis

In the last activity, you learned about egg embryology and about the interior parts of an egg. Now, you will learn about hatching out your own baby chicks, and how you may take steps to become more successful when doing this on your own. Just as a reminder, you have to have a fertilized egg for it to be viable for incubation. Think back to the activities on reproduction to remind yourself of this process.

When you are ready to begin the incubation process, a few things must be taken into consideration. The first is, "What temperature should the incubator be set to?" followed by "What should the humidity be?" Using the information on the website below, state the recommended temperature and humidity level for each of the incubation periods. Online resource: purinamills.com/chicken-feed/education/detail/hatching-eggs-at-home-a-21-day-guide-for-baby-chicks

Day 1-17:

Temperature: _____

Humidity: _____

Days 18-21

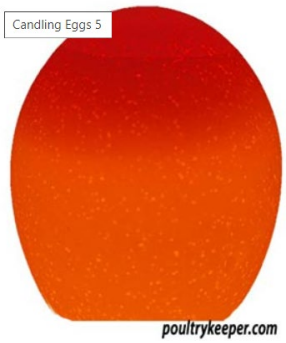
Temperature: _____

Humidity: _____

Answers:
Day 1-17: 100.5 degrees F & 50-55% humidity
Day 18-21: 100.5 degrees F & 70% humidity

One of the most fun parts about incubating eggs is to watch them grow. After about day 7, eggs can begin to be candled to determine if they are growing properly. Watch a video by Lancaster County (Nebraska) 4-H to learn about candling, and then you can test your knowledge.
Online resource: youtube.com/watch?v=nCkPzS0E3RM

Label the candled eggs in the following photo as to whether they are fertile or infertile.



_____

_____

_____

Photos obtained from: poultrykeeper.com/incubation-brooding/candling-eggs/

Once you have successfully hatched your chicks, keeping them healthy is the number one priority. One way to determine if your chicks are healthy is by taking their temperature at the navel. Chicks with a low temperature that has not reached correct body temperature are at risk for many developmental problems. Temperature can be easily with an infrared thermometer at the navel of young chicks. Young chicks should have a temperature of 40 degrees Celsius (104 F).

Think back to previous knowledge or activities in your 4-H poultry project. What are some of the developmental delays mentioned above that chicks might be experiencing from a low body temperature?

_____

_____

Unlike many animals, it is nearly impossible to determine the sex of a baby chick just by looking at its outward appearance because, as was discussed in previous activities, male sex organs are located inside the body of poultry. One way to determine the sex of chicks is by vent sexing, which involves holding the chick upside down, expelling fecal matter and everting the vent to look for a rudimentary male sex organ. This not a recommended practice for backyard poultry owners because it can easily harm the chick if not done properly.

References:
youtube.com/watch?v=nCkPzS0E3RM
purinamills.com/chicken-feed/education/detail/hatching-eggs-at-home-a-21-day-guide-for-baby-chicks
hobbyfarms.com/how-to-check-protect-chick-navel-health/
purinamills.com/chicken-feed/education/detail/how-to-sex-baby-chicks
poultrykeeper.com/incubation-brooding/candling-eggs/
hatchability.com/chick-temperature.html#:~:text=Body%20temperature%20can%20be%20easily,transportation%20conditions%2C%20time%2C%20etc.

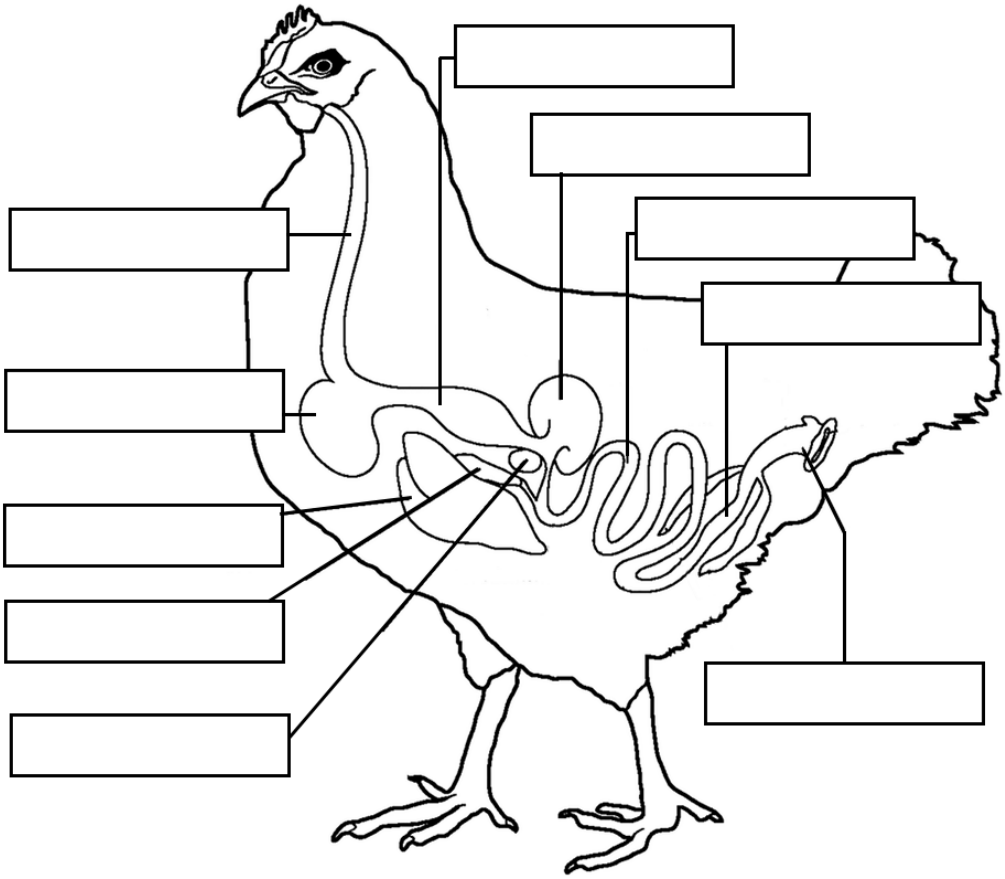
Activity 6 – Direction of Digestion

Project Outcomes:

- Label the major sections of the gastrointestinal tract: beak/mouth, esophagus, crop, proventriculus, gizzard, duodenal loop, pancreas, spleen, liver, lower small intestine, ceca, large intestine and cloaca

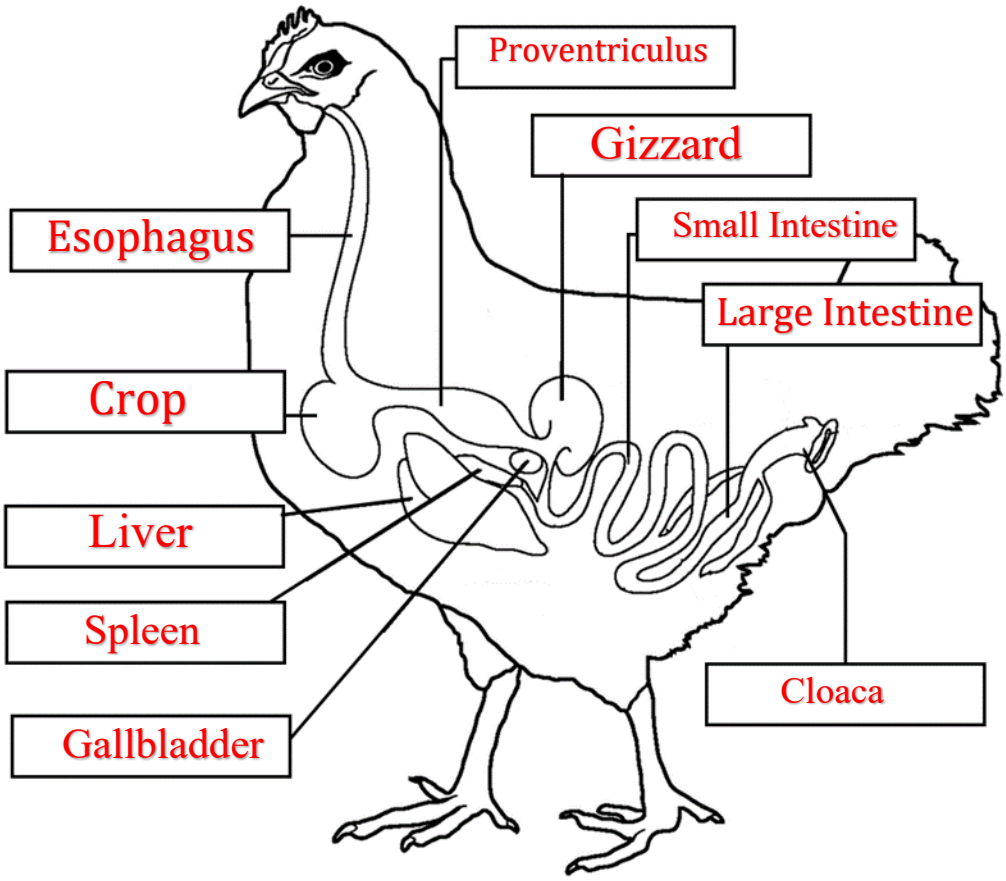
Begin this activity by completing the learning module on Nearpod:
app.nearpod.com/?pin=154C49796B9B7F001DC09AB7F8EC9103-1&utm_source=link

Now that you have completed the module, use what you have learned to label the diagram below.



cloaca	**large intestine**
small intestine	**gizzard**
proventriculus	**crop**
esophagus	**gallbladder**
spleen	**liver**

Answer Key



References:
youtube.com/watch?v=n3BW6m1HyII
Clavijo, Viviana & Vives, Martha. (2017). The gastrointestinal microbiome and its association with the control of pathogens in broiler chicken production: A review. Poultry Science. 97. 10.3382/ps/pex359.

Activity 7 – What's in Your Feed?

Projected Outcome:

- Define the following terms: carbohydrate, starch, fiber, lipids, amino acids, water soluble vitamins, fat soluble vitamins
- Identify the following feedstuffs from samples: distiller's grain, corn gluten meal, dicalcium phosphate, trace mineral premix, vitamin premix

extension.uga.edu/publications/detail.html?number=B1367&title=common-terms-used-in-animal-feeding-and-nutrition#W

For poultry to carry on with necessary life functions, their specific nutritional needs must be met. Since there is no feedstuff that can supply every need, you must be sure that the ingredients that you choose meet their needs. In this activity, you will determine the necessary components that are needed to sustain life and what feedstuffs provide them.

Carbohydrate- Carbohydrates make up the largest component of the poultry diet. Carbohydrates are used as a source of energy and are required to power cells. Most carbohydrates in a poultry diet come from cereal grains such as corn, wheat, milo, barley and rye. Carbohydrates can be digestible or non-digestible.

Starch- Starches are carbohydrates found within the animal cells. They are digestible and are found in the grain or seed portions of the plant. They are great sources of energy.

Fiber- Indigestible carbohydrates that are not energy dense. This can include parts of plants or forages such as lignin, cellulose and silica which can be found in the cell walls of plant cells. The higher the fiber content of a feedstuff, the less digestible it becomes to an animal.

Lipids- Water insoluble substances such as fats and oils. Lipids are very energy dense, highly digestible feedstuffs. This means that animals can consume less when animal health or stress is a factor and still receive adequate energy.

Amino acids- Amino acids are the building blocks that make up protein. Animals must take in amino acids from the food that they consume in order to promote normal growth.

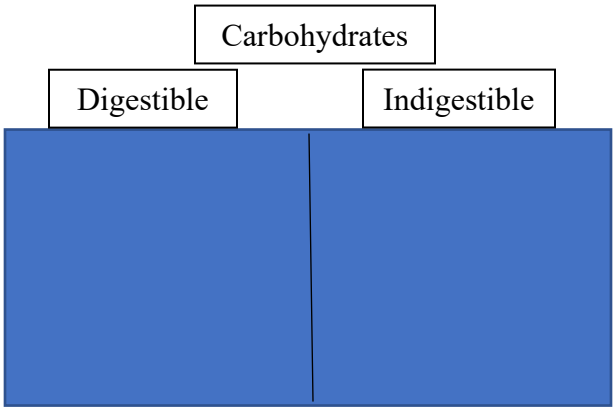
Water soluble vitamins- Vitamins that are readily dissolved in water, such as vitamins B and C. These vitamins are easily lost and need to be consumed often.

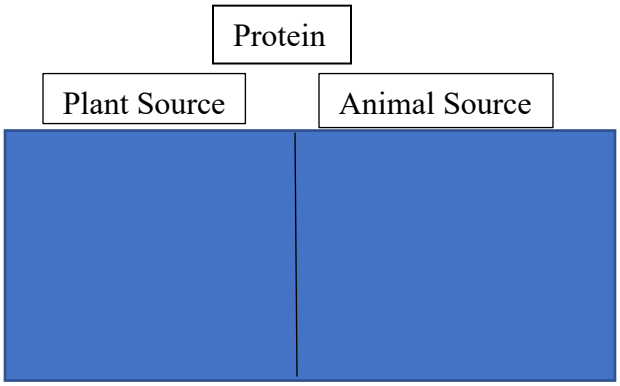
Fat soluble vitamins- Vitamins that are absorbed along with fats that are consumed in the animal's diet such as vitamins D, A, E and K. Since these vitamins are stored, they do not need to be consumed as readily as water soluble vitamins.

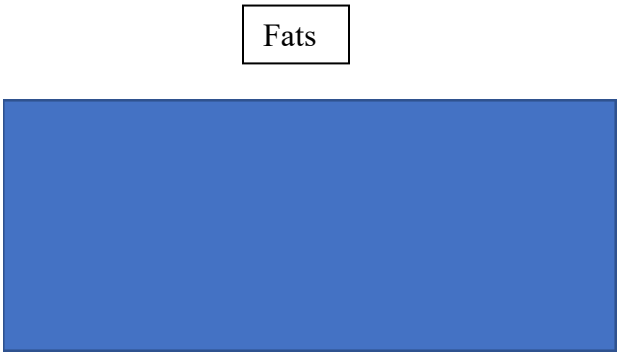
Use the websites below to sort the listed feedstuffs into the correct nutrient class. Online resources:
extension.uga.edu/publications/detail.html?number=C954&title=Nutrition%20for%20the%20Backyard%20Flock

afs.ca.uky.edu/livestock/test/feedstuffs

Corn	Tallow	Bone Meal
Vegetable Oil	Blood Meal	Lard
Soybean Meal	Cottonseed Meal	Milo
Grass (Cellulose)	Fish Meal	Wheat







Using the same feedstuffs website above, research and list important information about the following feedstuffs. Include information such as the feedstuffs nutrient class, average nutrient content and physical description.

Corn Distillers Grain

Corn Gluten Meal

Dicalcium Phosphate

Trace Mineral Premix

Vitamin Premix

Lysine

Methionine

Activity 8 – Ages and Stages

Project Outcomes:

- Analyze a feed tag for ingredients, guaranteed analysis and medicated status
- Describe the different nutritional requirements for the changing life stages of poultry

Table 1. Typical Nutrition Concentrations for Various Types of Poultry

	Protein (%)	Methionine (%)	Lysine (%)	Calcium (%)	Avail. Phos. (%)	Fat (%)	Fiber (%)
Broiler (meat bird)							
Starter (1–3 weeks)	22	0.50	1.30	0.95	0.45	5.0	2.5
Grower (4–6 weeks)	20	0.45	1.15	0.90	0.40	5.5	2.5
Finisher (7+ weeks)	18	0.5	0.95	0.85	0.35	6.0	2.5
Pullet (young hen)							
Starter (1–6 weeks)	20	0.45	1.10	1.00	0.45	4.0	3.0
Grower (7–18 weeks)	17	0.35	0.80	0.95	0.40	4.0	3.0
Egg Laying Hen							
In production (19+ weeks)	16–18	0.35–0.45	0.75–0.85	3.50–4.50	0.35–0.50	4.0	3.0–4.0

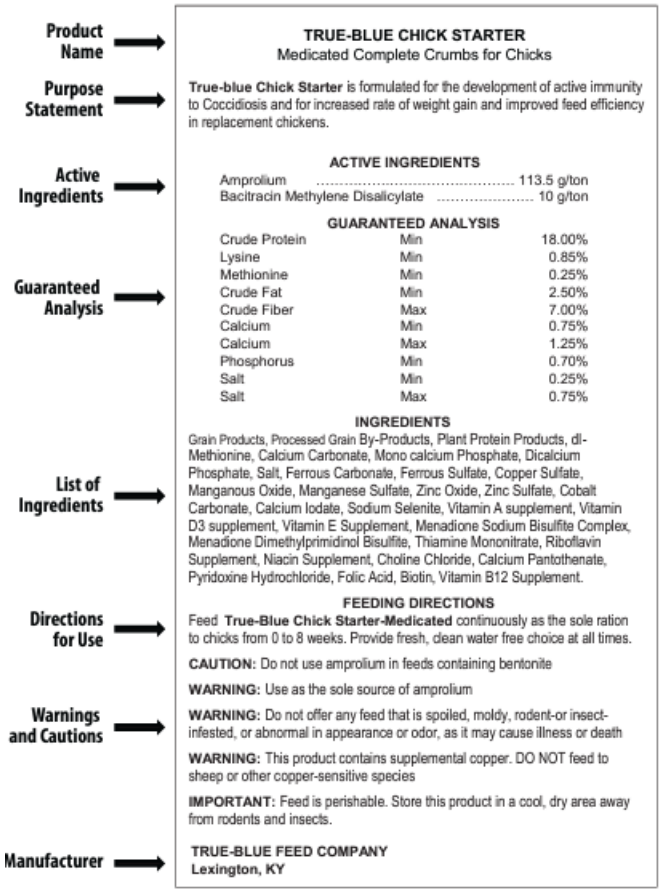
Note: Scratch feed should never be fed as a complete feed for any type of bird.

Feed labels are very important for poultry producers to be able to read and understand because the growth, development and productivity of your birds depend on it. If you think back to what you have previously learned, different ingredients make up a complete diet. The diet of chickens must be complete and meet the requirements of each nutrient based on that chicken's stage of life. The feed tag is a guarantee from the manufacturer that everything the chicken needs at a particular life stage is in the sack of feed.

Look at the table below to familiarize yourself with nutrient requirements of poultry used in different types of production.

Next, review the example feed tag below to familiarize yourself with the different sections. Consider what you learned in earlier activates about the different ingredients, which ones correlate to which nutrients and how they may affect the guaranteed analysis.

Also read the p**roduct name, active ingredients and directions for use** in order to determine medicated status. Many chick starters contain medication to help prevent diseases like coccidiosis early in the chick's life.



References:

extension.uga.edu/publications/detail.html?number=C954&title=nutrition-for-the-backyard-flock
www2.ca.uky.edu/agcomm/pubs/ASC/ASC216/ASC216.pdf
extension.uga.edu/publications/detail.html?number=C954&title=nutrition-for-the-backyard-flock

Next, review the feed label below and answer the questions based on the knowledge you have learned so far.

Sample Chicken Feed

GUARANTEED ANALYSIS

Crude Protein	Min	20.0%
Lysine	Min	1.10%
Methionine	Min	0.40%
Crude Fat	Mine	4.0%
Crude Fiber	Max	5.0%
Calcium	Min	0.6%
Calcium	Max	1.0%
Phosphorus	Min	0.75%
Salt	Min	0.2%
Salt	Max	0.7%

Ingredients

Grain Products, Processed Grain By-Products, Plant Protein Products, Animal Protein Products, Forage Products, Animal Fat (Preserved with BHA and Citric Acid), LLysine, Methionine supplement, Calcium Carbonate, Salt, Monocalcium/Dicalsium phosphate, Ferrous Suflate, Maganous Oxide, Zinc Oxide, Copper Sulfate, Iron Oxide, Ethylenediamine Dihydroioxdid, Sodium Selenite, Folic Acid, Vitamin D3 Supplement, Vitamin A Supplement, Choline Chloride, Niacin, Vitamin E Supplement, Menadione Dimethylpyrimidional bisulfite, Vitamin B12 Supplement, Calcium Pantothenate, Riboflavin, Biotin, Pyridoxine Hydrochloride, Thiamine, Propionic Acid, Natural Terpinenes, Acetic Acid, Sorbic Acid, Benzoic Acid, Mono- and Diesters of 1,2 Propanediol, Sodium Phosphate, Amorphous Silica, Propyl Benzoate, Propylparaben, Methylparaben, Propyl Acetate, Butylate

DIRECTIONS FOR USE

Feed SAMPLE CHICKEN FEED as the sole food to chickens from 1 day of age until slaughter, or supplemental food is no longer required. Beyond three weeks of age, supplemental grain and (or) forage may be used to meet a portion of their food needs.

1. Based on the feed tag above, what type of bird are you likely feeding?

2. Based on the feed tag above, what age are your birds?

3. What is the likely end goal for the birds that you are feeding?

Activity 9 – Deworming the Flock

Project Outcomes:

- Describe the difference between internal and external parasites and explain how each affects poultry species
- Define the following terms: analgesic, anthelmintic, immunity, prevention vs. treatment of disease, drug residue and quality assurance

Before beginning this activity, think back to prior learning experiences, either through school, 4-H poultry project work or any other type of learning opportunity, and write down your definitions for the following terms.

Parasite: _____

_____

Host: _____

_____

External:

_____

_____

Internal:

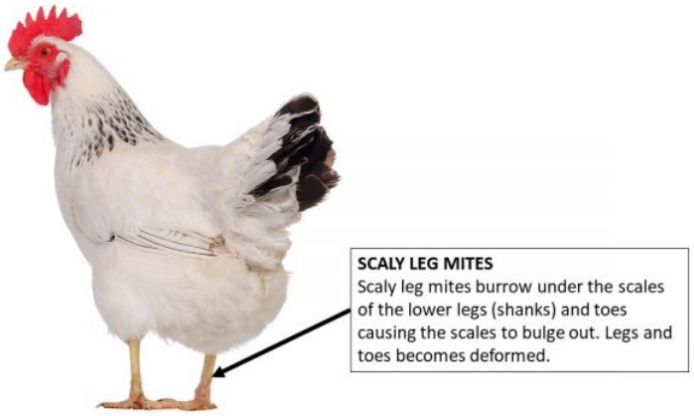
_____

_____

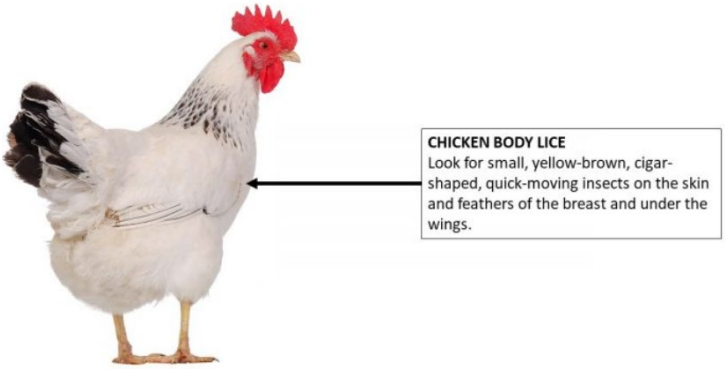
Now that you have those down, let's begin to learn about the different types of parasites that poultry owners may experience.

Northern fowl mites are the most common external parasite found in poultry. They are blood feeders, and heavy infestations can cause anemia. Effective treatments may involve treating all birds with an approved insecticide. Always read and follow label instructions, wear the proper protective equipment and consult with a veterinarian before applying.

Scaly leg mites are smaller than the northern fowl mite and live under the scales on birds' legs and feet. They will burrow under scales and feed on tissue. Treatments can include coating the legs with petroleum jelly or dipping legs in linseed oil. Since these parasites may live in the house, it's important to treat them there as well.



Poultry lice are biting lice that lay their eggs on the birds' feathers. Poultry lice will feed on dry skin scales, feathers and scabs. Infested birds may become agitated due to skin irritation. The same insecticides that treat northern fowl mites will treat lice, but multiple treatments are required.



Photos and references from: poultry.extension.org/articles/poultry-health/external-parasites-of-poultry/

Large roundworms are the most detrimental internal parasite to poultry owners. Roundworms can interfere with feed absorption and cause poor growth and production. Roundworms are passed from bird to bird by ingesting the parasite eggs in fecal-contaminated feed.

Other internal parasites that can affect poultry production are **threadworms** and **tapeworms**. These parasites are not as common but can still cause problems within poultry flocks if left untreated.

Some ways to avoid internal parasite infestations with your flock include:

1. Thorough removal of litter between flocks of chickens.
2. Keep litter as dry as possible.
3. Avoid overcrowding.
4. Keep wild birds, pigeons and other birds away from chickens. They may be infected and shedding the worm eggs.
5. Provide adequate drainage of ranges and move shelters frequently to decrease accumulation of droppings.
6. Keep birds off freshly plowed ground where ingestion of earthworms and other insects is more likely.
7. Use insecticides/anthelmintics to control insect populations.

Reference: edis.ifas.ufl.edu/publication/vm015.

List the following parasites according to whether they are internal parasites or external parasites: poultry lice, large roundworms, threadworms and tapeworms

External Parasites	Internal Parasites

References:
edis.ifas.ufl.edu/publication/vm015
poultry.extension.org/articles/poultry-health/external-parasites-of-poultry/
extension.psu.edu/deworming-backyard-poultry

Activity 10-Treatment of Sick Birds

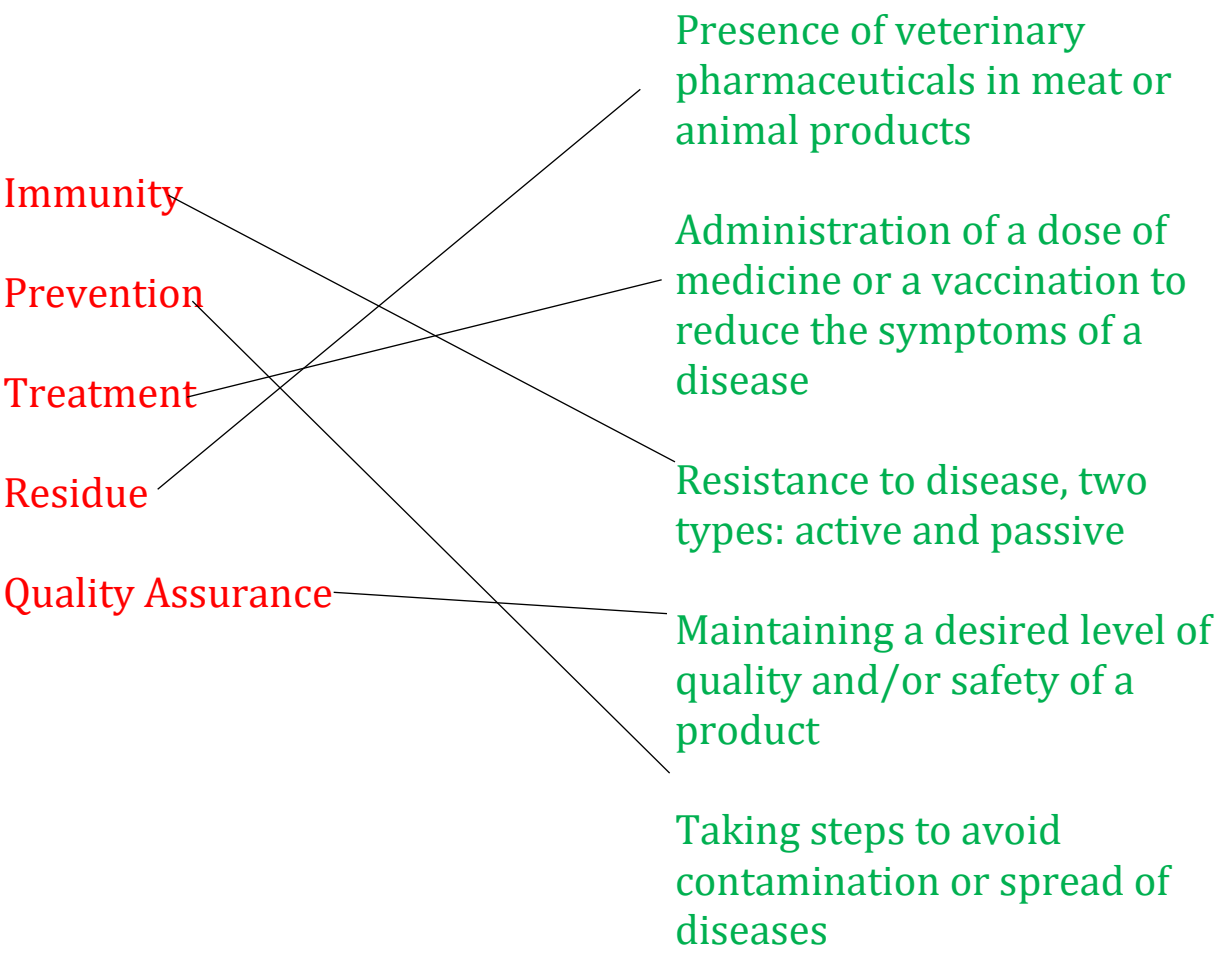
Project Outcomes:

- Define the following terms: analgesic, anthelmintic, immunity, prevention vs. treatment of disease, drug residue and quality assurance
- Describe the symptoms of the following diseases/conditions in poultry: avian influenza, Newcastle disease, infectious bronchitis, Salmonella, aspergillosis and mycoplasma.

Due to the nature of how poultry are raised, disease outbreaks are by far the most feared production problem that a producer can experience. No matter if it is a commercial broiler producer or a backyard egg producer, poultry disease is often quick to spread and fatal. It is important for producers to understand what these diseases are, how to prevent or treat them and what effects treatment may have on quality assurance regarding the food supply. Review the list of poultry terms on the website below and then match the term to the definition.
Online resource: afs.ca.uky.edu/poultry/glossary-poultry-terms

Immunity	Presence of veterinary pharmaceuticals in meat or animal products
Prevention	Administration of a dose of medicine or a vaccination to reduce the symptoms of a disease
Treatment	Resistance to disease, two types: active and passive
Residue	Maintaining a desired level of quality and/or safety of a product
Quality Assurance	Taking steps to avoid contamination or spread of diseases

Answer Key


Immunity
Prevention
Treatment
Residue
Quality Assurance
Presence of veterinary pharmaceuticals in meat or animal products
Administration of a dose of medicine or a vaccination to reduce the symptoms of a disease
Resistance to disease, two types: active and passive
Maintaining a desired level of quality and/or safety of a product
Taking steps to avoid contamination or spread of diseases

Now that you have learned some of the important terms related to poultry health, you need to understand what diseases are a danger to poultry production and how they can be treated, if it is possible. Use the Merck Veterinary Manual, or another reputable source to determine the symptoms, best methods of prevention, and methods of treatment of each listed disease.
Online resource: merckvetmanual.com/exotic-and-laboratory-animals/backyard-poultry/common-infectious-diseases-in-backyard-poultry#Marek's-Disease_v16229034

Avian Influenza

Newcastle Disease

Infectious Bronchitis

Salmonella

Aspergillosis

Mycoplasmosis

References: afs.ca.uky.edu/poultry/glossary-poultry-terms
merckvetmanual.com/exotic-and-laboratory-animals/backyard-poultry/common-infectious-diseases-in-backyard-poultry#Avian-Encephalomyelitis_v48511531

Activity 11 – Making Weight

Project Outcomes:

- Define the following terms: live weight, carcass weight, dressing percentage and WOG
- Evaluate poultry carcasses to determine correct grades

Another important aspect of the 4-H poultry project is understanding terminology related to slaughter and processing of bords. Typical broiler meat chickens are slaughtered after 7-9 weeks of age. In this lesson, you will learn about terms related to slaughter, how to calculate weights relative to slaughter and how to determine carcass grades of market ready birds. When considering weights and grades, think about how heavier, higher grading carcasses are worth more money. Now consider the factors you have learned before that may contribute to that.

Live weight- The weight at which birds are slaughtered. Typical weights for backyard broilers range anywhere from 3-4 pounds. Heavier live weights generally mean heavier carcass weights as well.

Carcass weight- The weight of slaughtered bird after it has been bled, plucked and eviscerated.

WOG (Without Giblets)- The weight of a slaughtered bird after giblets (heart, liver, gizzard and neck) have been removed.

Dressing percentage- Carcass weight / live weight

Calculate the dressing percentage of these birds.

Bird 1:

Live weight = 4 lbs.
Carcass weight = 2.75 lbs
Dressing percentage = _____%

Bird 2:

Live weight = 5 lbs
Carcass weight = 3.47 lbs
Dressing percentage = _____%

Answers: 1- 68.75%; 2- 69.4%

Next, you will learn how to grade a processed, market-ready poultry carcass. If you choose to participate in the Poultry Judging Contest with your county 4-H club, this is a very important topic to understand. Below are the USDA specifications for poultry carcass grades. Use it, along with the information found here, to help you determine the grades on the following carcasses.

USDA Specifications for Standards of Quality for Individual whole Carcasses

FACTOR		A Quality		B Quality	C Quality	No Grade
Exposed Flesh **Carcass weight** **Min**	**Max**	**Breast and Legs**	**Elsewhere (wing and back)**	**Entire carcass**	**Entire carcass**	**Entire carcass**
> 2 lb.	6 lb.	¼ inch	1½ inches	No more than ⅓ of the flesh exposed normally covered by skin exposed	Over ⅓ of the flesh exposed normally covered by skin No limit on exposed flesh provided meat yield not affected	Flesh removed from any part in which the normal meat yield is materially affected (>⅛ inch deep and diameter of a quarter coin or larger)
> 6 lb.	16 lb.	½ inch	2 inches			
> 16 lb.	none	½ inch	3 inches			
Disjointed and broken bones		1 disjointed No broken bones		2 disjointed *or* 1 disjoint and 1 non-protruding broken *or* 1 non-protruding broken	Any protruding broken or cut bones No limit on disjoints or broken bones	N/A
Missing parts (whole carcass only)		Wing tips Tail removed at base		Wing to 2nd joint Tail and back area not wider than base of tail and extending up to halfway between base of tail and hip joints	Wing to 3rd joint (entire wing) Tail and back area not wider than base of tail extending up to hip joints	Back area removed wider than the base of the tail and/or extending beyond the hip joints Flesh removed from any part in which the normal meat yield is affected (>⅛ inch deep and diameter of a quarter coin or larger)
The parts of the carcass shall be: each wing (2), each leg (2), the entire breast (including rib area), and the entire back (width of hip joints to the width of the wing joints).						

1.



2.



References:
extension.umn.edu/small-scale-poultry/raising-chickens-meat

Answer: 1-B; 2-A

Activity 12 – Retail Cuts

Project Outcomes:

- Identify the following retail cuts of a broiler carcass: breast fillet, tender, drumette, whole wing, leg, thigh and drumstick

In the previous lesson, you learned about how chicken dressing and grades affect marketability and price. In this activity, you will learn some of the most valuable retail cuts, how to identify them and where you can find them on a carcass. Consider that as a whole a high grading carcass may be valuable relative to others, but by dividing up a carcass into many different retail cuts, processors are able to make more money. Most people love at least one particular cut of chicken, maybe it's chicken wings, tenders or drumsticks. When a processor divides the cuts up from one carcass, they are enabling you to have what you want but not have to purchase a whole bird just to get it.

Use the website below to familiarize yourself with many of the popular retail cuts of poultry. Afterwards, identify the following retail cuts of poultry below.
Online resource: national4hpoultry.ca.uky.edu/marketpoultry/partsID

1. 

_____

2. 

_____

3. 

_____

4. 

_____

5.

_____

6.

_____

7.

_____

Answers:

1. Breast Filet (Boneless Split Breast)
2. Tenderloin
3. Whole Wing
4. Whole Leg
5. Thigh
6. Drumstick
7. Drumette

Reference:
national4hpoultry.ca.uky.edu/marketpoultry/partsID

Activity 13 – Recordkeeping

Project Outcomes:

- Understand the importance of proper recordkeeping and how it relates to all areas of production

Recordkeeping is an extremely important aspect of your 4-H project. Keeping accurate records of expenses, equipment inventory, veterinary or heath records and incubation data will help you become a more efficient and effective decision maker. Below are multiple examples and templates of some ways for you to keep records on your flock.

Example Feed Record Chart

Feed Costs			
Date Purchased	Type of Feed	Amount	Cost
1/1/2024	Chick Starter	25 lbs	$15.00
2/1/2024	Chick Grower	50 lbs	$27.50

Feed Record Chart

Feed Costs			
Date Purchased	Type of Feed	Amount	Cost

Incubation Record Chart

Incubation Data Collection Chart								
	Time Eggs were Turned							
Day #	1	2	3	4	5	Incubator Temp	Humidity Level	Comments/Discarded Eggs
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								

Example Inventory List

Inventory List			
Item	Purchase Date	Amount of Item	Value
Heat Lamp	1/1/2024	1	$15.00
Waterer	1/1/2024	2	$18.00

Inventory List			
Item	Purchase Date	Amount of Item	Value

Receipts		
Date	Item(s) Sold	$ Sold for

Congratulations! You have completed the Intermediate Poultry Project Curriculum. By completing this part of the project, you have learned more in-depth information about poultry, tools and recordkeeping.

Continue to seek opportunities to apply what you have learned in your project andlearn new thi ngs along the way. More information can be found on the Tennessee 4-H Poultry project webpage, including the project outcomes and curriculum for beginner and advanced levels.

For more opportunities in the poultry project area, you may talk with your 4-H agent about the following contests and activities:

- Youth for the Quality Care of Animals Certification
- Livestock Skillathon Contest
- Livestock Judging Contests
- Poultry Shows and Showmanship

3-5 YEARS IN PROJECT

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