

Unit C: Poultry Management

Lesson 2: Feeding, Management and Equipment for Poultry

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Describe feed rations for chickens.
2. Manage feed rations for turkeys.
3. Manage rations for ducks and geese.
4. Equipment used to manage poultry.

Recommended Teaching Time: 2 hours

Recommended Resources: The following resources may be useful in teaching this lesson:

- A PowerPoint has also been developed for use with this lesson plan

List of Equipment, Tools, Supplies, and Facilities

Writing surface

PowerPoint Projector

PowerPoint Slides

Various food components of poultry feeds

Terms: The following terms are presented in this lesson (shown in bold italics and on PowerPoint Slide # 2):

Grit

Palatability

Interest Approach: Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Write the words “duck” “chicken” “turkey” and “goose” on the chalkboard. Ask the students, “Can all humans eat the same foods?” They should answer yes. Now ask the students, “Can all of these birds eat the same foods?” Ask them to list the things these birds can eat. After they answer whether all of these birds can or cannot eat the same foods, ask them to explain why they believe that. Use this discussion to lead into Objective 1.

Summary of Content and Teaching Strategies

Objective 1: Describe feed rations for chickens.

(PowerPoint Slide #3)

- I. Properly feeding poultry will supply all of the nutrients the birds need to adequately grow and thrive.
 - A. Chicken feed rations need to provide the six nutrients- protein, carbohydrates, minerals, vitamins, water, and fats.
 - B. Most of the energy in poultry diets is supplied by grains and fats.
 - 1. Chickens do not have the ability to process high amounts of fiber.
 - 2. The feed ration should be composed of about 50 to 80% grains.
 - C. When grains are used in the feed, they should be ground.
 - 1. Corn should be coarsely ground
 - 2. Oats, barley, and millet should be finely ground.
 - 3. Wheat should be processed through a roller mill.

(PowerPoint Slide #4)

- D. Fats should be no more than 10% of the ration.
 - 1. Fats help increase the **palatability**, or the taste, of the ration, decrease dustiness and improve the texture.
 - 2. Rations containing fat may become rancid in hot weather unless they have been chemically stabilized.

(PowerPoint Slide #5)

- E. Proteins supply the essential amino acids needed by chickens.
 - 1. The most commonly needed amino acids are arginine, glycine, lysine, methionine, and tryptophane.
 - 2. Common sources of protein for chicken rations come from soybean meal, meat scraps and fish meal.
 - 3. If the ration is balanced based on amino acid needs, this will ensure the nutritional needs are met.

(PowerPoint Slide #6)

- F. Water is the most important nutrient and makes up the largest portion of the bird's body.
 - 1. The age of bird will determine the water consumption.
 - a. Daily consumption per 1000 broilers ranges from 20 liters at one week of age to 380 liters at 8 weeks of age.
 - b. Per 1000 pullets, 20 liters are consumed at one week of age and 170 liters at twenty weeks of age.
 - c. Breeding and laying hens consume about 189 liters per day per 1000 birds
 - 2. Temperature increase will also increase water consumption.
 - a. Birds may consume as much as three times the water on a hot day compared to a cool day.

(PowerPoint Slide #7)

- G. Many feed rations are supplemented with minerals.
 - 1. Mineral requirements of poultry include calcium, phosphorus, manganese, iodine, sodium, chlorine, and zinc.
 - 2. It is recommended that calcium make up 3.4% of the ration for laying hens.

- a. Calcium is of significant importance to laying hens as it is crucial in the formation of eggshells.

(PowerPoint Slide #8)

- H. Other components like **grit** are added to help the gizzard in grinding feed since chickens do not have teeth.
1. Grit comes in small, medium, and large sizes.
 - a. Small size should be given to chicks and larger size to hens.
 - b. Feed grit to young chicks by sprinkling it on the feed twice a week.

(PowerPoint Slide #9) This slide shows a picture of grit used in poultry feed. There are small pieces of gravel and oyster shells included in this grit. Free ranging chickens will eat enough stones as they search for food they will not need to be fed this in their feed.

Obtain feed rations commonly used in feeding chickens. Provide the different components in their raw forms so the students can see what each component looks like before it is mixed together. Have the students determine what nutrients are provided by each of the components.

Objective 2: Manage feed rations for turkeys.

(PowerPoint Slide #10)

- II. Feeding rations to the flock depends upon the species and age of the birds.
- A. Feeding turkeys
 1. Poults (young turkeys) must be fed and watered as soon as possible after hatching.
 - a. If watering and feeding is delayed beyond 36 hours, the poults will have problems learning how to eat.

(PowerPoint Slide #11)

- b. Start the poults on a pre-starter ration that contains 28% protein and use it for about a week.
- c. From four to eight weeks of age the starter should contain 26% protein and a higher energy level.
- d. Daily water consumption per 1000 turkeys ranges from 38 liters at one week of age and 360 liters at eight weeks of age.

(PowerPoint Slide #12)

2. Growing turkeys are moved to range at eight to ten weeks of age.
 - a. The range should contain forage and/or grain crops.
 - b. Growing turkeys should be separated by sex as toms have a higher protein requirement.
 - c. Turkeys generally give better feed conversions when fed complete mixed rations.

(PowerPoint Slide #13)

- i. Male turkeys at eight to 12 weeks of age and females at eight to 11 weeks of age should be given a ration of 22% protein.
- ii. Rations for male turkeys 12 to 16 weeks of age and female turkeys at 11 to 14 weeks of age should have a protein content of 19%.
- iii. Male turkeys 16 to 20 weeks of age and females 14 to 17 weeks should have a protein content of 16.5%.

(PowerPoint Slide #14)

- iv. A feed ration for male turkeys 20 to 24 weeks of age and female turkeys 17 to 20 weeks of age should have a protein content of 14%.
- v. Male turkeys are generally harvested at 24 weeks of age and female turkeys at 20 weeks of age.

(PowerPoint Slide #15)

- d. The daily water consumption for 1000 turkeys ranges from 435 liters at nine weeks of age to 757 liters at 20 weeks of age.

(PowerPoint Slide #16)

- 3. Breeding turkeys should be selected at about 16 weeks of age for the breeding flock.
 - a. Female breeding turkeys from 16 to 30 weeks and males from 16 to 26 weeks receive a holding diet of about 12% protein.
 - b. A breeding ration containing 14% is then fed.
 - c. Males are fed a breeding ration at 26 weeks of age which will control their weight while females are fed all they can eat.

Discuss with the students the differences between the male and female turkeys' rations. Ask them, "Why are rations adjusted as the turkeys grow older?" and also, "Why is there a difference in age between male and female turkeys when they receive the rations?"

Objective 3: Manage rations for ducks and geese.

(PowerPoint Slide #17)

III. Ducks and geese have similar requirements for feeding.

- A. For the first two weeks, feed a starter ration with about 22% protein and provide all that the birds can eat.

(PowerPoint Slide #18)

- 1. Geese should be allowed to roam on pasture during the day after they are two weeks old.
 - a. Geese should also be given a supply of insoluble grit in addition to the feed.
 - b. Geese will begin eating grass when only a few days old and can live entirely on pasture when five or six years old.
 - i. While doing this, a growing ration is recommended.
 - c. If the pasture is not of good quality additional grain should be fed.

(PowerPoint Slide #19)

- 2. After geese are allowed to forage, they are fed grain for the last two to three weeks up to 18 weeks when they are generally harvested or marketed.

(PowerPoint Slide #20)

- B. Ducks can be raised in either total confinement or in a growing house.
 - 1. Ducks should be provided with an area to swim or wade which provides exercise.
 - 2. A starter diet of about 22% protein is given to ducks for two weeks.
 - 3. After the starter diet they are given a diet containing 18% protein and finished on a diet containing 16% protein.

(PowerPoint Slide #21)

- 4. Ducks are usually ready for market in seven to eight weeks.
- 5. Ducks will eat some green feed but are not as good at foraging as geese.
 - a. Pasture is not necessary for ducks.

(PowerPoint Slide #22)

- C. Both ducks and geese should be supplied fresh water that is accessible at all times.
 - 1. Ducks and geese consume large amounts of water.
 - 2. The water provided should be designed so that the ducks and geese cannot swim in the water.

Have the students create a list of the similarities and difference in managing the feeding of ducks and geese. Record their answers in a chart on the chalkboard.

Objective 5: Equipment used to manage poultry.

(PowerPoint Slide #23)

IV. The equipment used to provide the feed, water and comfort to the poultry is very important and will increase the production of the poultry operation.

(PowerPoint Slide #24)

- A. Clean water needs to be provided at all times.
 - 1. An automatic waterer placed in the coolest area of the pen or house is the best for small flocks.
 - a. Automatic waters will work best for large size flocks and will reduce the amount of time needed to water the birds.
 - 2. If manual waterers are used, the number of waterers required and frequency of refilling should be taken into account.
 - 3. The type of waterer will also depend upon the type of bird being fed.
 - a. Ducks and geese will have a tendency to swim in their waterers so they should be provided a waterer which will discourage or prevent swimming.

(PowerPoint Slide #25) This slide shows a picture of a common poultry waterer. The lid on the top lifts off and the tank can be filled with water. It will fill the tray and water will slowly enter the tray as water is consumed by the birds. This slide also shows a picture of an automatic poultry waterer. The system is hooked to a continuous water supply and when the animal drinks from the system a float valve will continue to adjust the level of water so it remains constant.

(PowerPoint Slide #26)

- B. Housing for poultry is common across all species.
 - 1. Poultry housing should be easy to clean and disinfect.
 - 2. All houses should provide adequate ventilation to prevent excessive dampness.
 - 3. For small chicks, a heat lamp or some type of warmth needs to be provided to keep the chicks from becoming too cold.

(PowerPoint Slide #27)

- C. Depending upon the size of the poultry operation, automatic feeders and waterers are sometimes present.
 - 1. These need to be cleaned regularly as well as maintained.
 - 2. Portable waterers and feeders are used for smaller flocks.

(PowerPoint Slide #28) This slide shows 3 pictures of various designs of outdoor poultry housing. There are numerous designs possible. Ask the students to determine some factors that will impact poultry housing.

(PowerPoint Slide #29) This slide shows two pictures of a chicken operation. In the top left of the slide is a picture of the outside of the barns. The sides are open to allow for ventilation. The bottom right picture shows the inside of the barn where the poultry roam free on the ground. On the right side of the barn, the chickens are feeding. Opposite the feeders are the waterers. These chickens are most likely being raised for meat consumption.

(PowerPoint Slide #30) This slide shows a poultry operation in Afghanistan. Notice the automatic waterers suspended from the ceiling.

(PowerPoint Slide #31) This slide shows a large chicken operation but the chickens are confined. Notice the sides of the barns are not open but there are vents at the top. Inside, the chickens are raised in cages. The feed is brought to the chickens in a trough by a large screw conveyor. These chickens are being raised for egg production. Notice the eggs on the lower left side of the picture. Chickens raised for eggs in large operations are generally confined in cages.

(PowerPoint Slide #32) Pictured here is a small poultry operation in Afghanistan. The feeder on the top left is a manual feeder and will need to be filled for the correct amount of birds.

(PowerPoint Slide #33) This slide shows an open range poultry operation. Notice the pasture has plenty of green grass.

(PowerPoint Slide #34) Pictured here is a goose operation. The birds are kept in the barn but otherwise allowed to roam outside in fenced in areas of pasture.

(PowerPoint Slide #35) Pictured here are some chickens in a small operation in Afghanistan. Notice the bottom left picture where the birds are in their individual boxes for roosting. The top two pictures show chickens allowed to roam around and the bottom right is ducks freely moving around. Have the students discuss the different housing arrangements that might be needed by ducks as compared to chickens.

(PowerPoint Slide #36) Here is another example of housing in a free range chicken operation.

(PowerPoint Slide #37) Here is an example of a confined layer operation. The chickens lay the eggs in the cage. The eggs then roll to the front of the cage into the trays. In this operation, the eggs travel on a conveyor belt to a central location for processing.

(PowerPoint Slide #38) Shown here is a common method of feeding for small poultry operations. The feed is scattered on the ground and the chickens peck at the ground to

get the feed. This method does not require much grit in the feed as the chickens will acquire small rocks from the ground while eating.

Using the information on the four poultry production systems discussed in Unit A: Lesson 1 show slides #28 - #38 again and have the students determine if it is a Scavenger, Semi-scavenger, Semi-commercial, or Commercial type of system. Have the students discuss any equipment they have seen in use for raising poultry. Place them into groups and have them create a list of materials they would need to start raising poultry. Provide additional written material or internet access to complete this activity.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used to determine which objectives need to be reviewed or re-taught with a different approach. Questions on **PowerPoint Slide #39** can also be used.

Application: Have the students visit a poultry producer, or have the producer visit the class. Discuss with the producer what they feed their birds, how they determine what to feed, what equipment they use and any other management issues involved in raising poultry.

Evaluation: Evaluation should focus on student achievement of this lesson's objectives. A sample written test is attached.

Answers to Sample Test:

Matching

1. Palatability will improve the feed taste.
2. Poultry do not have teeth so grit is needed to grind up the food for processing in the digestive system.
3. They should all be easy to clean and disinfect. The housing should provide adequate ventilation to prevent excessive dampness. Houses should also provide heat for young birds.
4. Calcium is an important mineral in the development of eggs. A lack of calcium will result in thin shelled and weak eggs.

True/False

5. F
6. T
7. T
8. F
9. T
10. F

Sample Test

Name _____

Test

Unit C Lesson 2: Feeding, Management and Equipment for Poultry

Part One: Short Answer

Instructions. Provide the word or words to complete the following statement.

1. What is palatability and why is it important in poultry feed?
2. Why is additional grit required in feeds?
3. What do all poultry housings have in common?
4. Why is calcium crucial to a laying hen's diet?

Part Two: True/False

Instructions. If the statement is true write a "T", if the answer is false write "F".

5. ___ Chickens have the ability to process high fiber feeds.
6. ___ An increase in temperature will also increase water consumption.
7. ___ Most of the energy in poultry rations comes from fats.
8. ___ Essential amino acids are provided by minerals in the ration.
9. ___ Poults should be fed and watered as soon as possible after hatching.
10. ___ Ducks and geese can swim in the same water they drink.