Unit D: Animal Management

Lesson 1: Meeting the Housing Needs of Livestock

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

1. Describe facility needs for cattle.
2. List and explain facility needs of sheep and goats.
3. Discuss facility needs for poultry.

Recommended Teaching Time: 3 hours

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

Ensminger, M. E., *Animal Science.* Danville, Illinois: Interstate Publishers, Inc. 1991

Jackson, Nancy S., Greer, William J., and Baker, James K. *Animal Health*. Danville, Illinois: Interstate Publishers, Inc. 2000

Internet keywords: livestock housing, dairy housing, beef housing, sheep and goat housing and poultry housing

List of Equipment, Tools, Supplies, and Facilities:

Writing surface
PowerPoint projector
PowerPoint Slides
Transparency Masters
Copies of student lab sheet LS: 1-1
Paper

Terms: The following terms are presented in this lesson (shown in bold italics): **PowerPoint Slide 2.**

Cold housing
Flat milking barns
Intensive grazing
Milking parlors
Warm housing
Free Stall Facilities
Open Housing
Coop
Ventilation

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.

Tour an animal facility of any kind. Ask the owner about each building and what it is used for. Have students prepare at least one question each before each tour. Once you get back, discuss any questions that did not get answered on the tour.

Summary of Content and Teaching Strategies

Objective 1: Describe facility needs for cattle.

Anticipated Problem: What facilities are needed to raise cattle?

Ask students to list things needed everyday for survival. Of the items on the list, which are the most important? Housing should be one of them. Lead this into objective 1.

I. Individual needs for specific facilities will depend on what production system you are in.

A. The first thing to consider when raising cattle is the location of the housing facility. You must make sure that you have access to water and grazing and all other necessary amenities. **PowerPoint Slide 3.**

B. You should build facilities where they can be expanded or changed to meet future needs. **Ask students to explain why this would be important.**

C. If there is a need for fences, they need to be sturdy to keep animals in. In some areas of the world fences may be electric, wooden, vinyl, or barbed wire. Stones gathered from the field have also been used for fences. Gates should be in useful and accessible areas.

D. No matter what kind of production system you have, water must be available for all animals. **PowerPoint Slide 4.**

E. Feeders need to be located where cattle have access to salt and mineral. You need enough feeding space for all animals to eat at the same time. If all animals cannot eat, they may become aggressive or some may go without food.

F. Storage of feed is necessary to keep it clean and have minimal waste. Large livestock operations will use upright silos, feed rooms, trench silos, and metal storage bins depending on the type of feed they are using to feed the animals they are raising. **PowerPoint Slides 5 and 6.**

G. You will also need equipment to work with your animals. It is much safer for both the producer and the cattle if there is some type of cattle chute to hold the animal for tagging, vaccinations and other treatments and loading chutes for helping them into a truck for hauling. **PowerPoint Slide 7.**

H. Available resources for building material will determine the type of housing you provide your animals. Make a list of reasons to build to make sure the new building meets all the needs. Buildings should protect cattle from both heat and cold. If the housing for cattle is separate from other housing it is important to consider prevailing winds, accessibility to water, and space requirements. Two examples of buildings used for cattle can be found on **PowerPoint Slide 8.**

II. Facilities and equipment are very important to the efficiency of a commercial dairy operation. Housing, milking systems, feeding equipment, and manure facilities are the most important factors to consider. **PowerPoint Slide 9.**

A. Housing protects both the animals and humans. Since large commercial dairy operations are very labor intensive it is necessary to also consider your needs for a comfortable environment.

1. ***Cold housing*** is the term used for a building that is not heated and kept cold during the winter. Cold housing is usually loose housing in the form of a free stall building. **PowerPoint Slide 10.**
2. ***Warm housing*** is the term used for a building that is heated and kept warm during the winter. Warm housing can also be a free stall, but it is insulated. Warm housing also refers to enclosed barns with tie stalls. Calf hutches are used for young calves and open sheds are commonly found housing young stock or dry cows. Dairy animals on open pasture should be protected from extreme heat, extreme cold, and high winds. **PowerPoint Slide 11.**

B. Milking facilities are essential to dairy production. ***Flat milking barns*** are barns where dairy are milked in their stall. **Milking parlors** are concrete floored structures where cows come into the parlor to be milked. Some dairy operations are large enough to have a milking parlor that milks 100 cows at once and operates 24 hours per day, seven days a week. **PowerPoint Slides 12 and 13.**

C. Feeding systems are important to both beef and dairy cattle operations. Efficiency, cost, and location are important when considering where to store feed. Many types of feed must be stored including corn, silage, haylage, dry hay, straw, minerals, and grains. Silage bags, upright silos, metal bins, and hay mows are a few examples of where feed can be stored. **PowerPoint Slide 14.** ***Intensive grazing*** is when cows are on pasture and graze for 24-48 hours and are then moved to another pasture. It is labor intensive, but requires less storage of feed. Feeding carts, track feeders, computerized feeders, and other modern techniques help make feeding dairy easier and less time consuming. **PowerPoint Slide 15.**

D. Since dairy produce 8 percent of their body weight in waste every day, manure handling facilities are extremely important to the success of the operation. All manure handling systems should serve three functions:

1. Keep animals clean
2. Provide labor-friendly collection
3. Dispose of waste in a responsible manner **PowerPoint Slide 15.**

E. There are two types of handling systems that are named for the type of manure they handle:

1. Solid manure systems
2. Liquid manure systems

Both have advantages and disadvantages but the largest difference is that liquid systems are more expensive but are also more efficient. **PowerPoint Slide 17.**

Use LS: 1-1 and have student's research manure disposal concerns. This will be a great start on the following lesson about Livestock Waste Management.

Objective 2: List and explain facility needs of sheep and goats.

Anticipated Problem: What facilities are needed to raise sheep and goats?

Ask students to recall some of the facilities needed to raise cattle. List a few of the items on the writing surface. Then, ask students if these items will be the same or different for sheep and goats. Have them explain their answer.

III. Both sheep and goats are hardy animals, they may not require as much protection from the environment as other animals. Sheep and goats are less expensive to raise because they do not require costly shelters. However, there are still many things that you will need to raise them. **PowerPoint Slide 18.**

A. Housing for goats and sheep will vary with operations and weather conditions. It is recommended that housing be built so they are open to the south. This allows for the sun to help warm the inside of the building during cold weather. You will need bedding, land for grazing and water in accessible areas. **Free stall facilities** are built for does that are milking. Loose or **open housing** is used for kids and yearlings. Horns may need to be removed from those goats kept in close confinement. **PowerPoint Slide 19.**

B. Fencing needs to be 1.5 meters or higher and have only 10-13 centimeters between strands for sheep and goats. When raising goats and sheep, it is more important to focus on keeping predators out than keeping your animals in. **PowerPoint Slide 20.**

C. Depending on the operation, a corral chute system, shearing equipment and a sheep/goat chair that can be used when trimming hooves or for pregnancy testing may be useful.

D. Always make sure you have enough space for all animals to be comfortable. **PowerPoint Slide 21.**

Have students draw or make a mock fencing system for sheep. They may bring materials from home if they are making the fencing system. Be sure that students focus on the needs of the animal, specifically keeping predators out. After they have finished, have each student share with the class. Have them explain why they chose that type of fencing.

Objective 3: Discuss facility needs for poultry.

Anticipated Problem: What facilities are needed to raise poultry?

Ask students what is the main difference for the type of housing needed for large animals like cattle and sheep and for smaller animals like poultry?

IV. Housing for poultry will be determined by the type of poultry you have and the amount of space available in your area. Existing structures and buildings may be able to be converted into housing for poultry. Keep these things in mind when providing facilities for poultry. **PowerPoint Slide 22.**

A. Protection:

1. A good poultry house protects the birds from the elements (weather), predators, injury and theft. Poultry require a dry, draft-free house. This can be accomplished by building a relatively draft free house with windows and/or doors which can be opened for ventilation when necessary. A **coop** is the housing unit for poultry. Build the coop on high, well-drained areas. This prevents prolonged dampness and water saturation of the floor of the coop and outside runs. Face the front of the coop, the windows and outside run to the south which allows the sun to warm and dry the coop and soil. Allowing an adequate level of space per bird also helps keep the humidity level in the coop to a minimum. **PowerPoint Slide 23.**

2. Keeping poultry totally confined together with fence and covered runs are your best protection from predators. If you are building a new facility, consider laying a concrete floor, and start the wall with one or two concrete blocks. This prevents rodents, snakes, and predators from digging under the walls and the floors. Windows and doors must be securely covered with heavy-gauge mesh wire or screening when opened.

3. With outside runs, bury the wire along the pen border at least 30 centimeters deep, and toe the fence outward about 15 centimeters. This stops most predators from digging under the fence. Animals always dig at the base of a fence. By toeing the fence outward and burying it, the predator digs down right into more fencing. To prevent problems with hawks and owls, cover your outside runs with mesh wire or netting. A good ground cover of millet, broomcorn, sorghum, lucerne or shaftal or other tall leafy vegetation also provides cover for the birds to hide under. **PowerPoint Slides 24 and 25.**

B. Adequate Space:

1. Birds need adequate space for movement and exercise as well as areas to nest and roost. Space requirements vary with the type of bird you raise.

Minimum Space Requirements		
Type of Bird	Sq cm/bird inside	Sq m/bird outside runs
Bantam Chickens	30.48	1.22
Laying Hens	45.72	2.44
Large Chickens	60.96	3.05
Quail	30.48	1.22
Pheasant	152.40	7.62
Ducks	91.44	4.57
Geese	182.88	5.49

Nests: Always provide at least one nest for every 4-5 females in the flock. **PowerPoint Slide 26.**

C. Easy Access to Feed and Water:
1. Feeders and waters should be placed conveniently throughout the pen for birds' access. Place the bottom of the waterers and top lip of the feeders at the birds' back height. This will keep the feed and water clean and prevent wastage.
2. Small birds like pigeons, bantams and quail, only require 2.5 linear cm/bird of feeder and water space and large birds require 5-8 linear centimeters/bird.
3. When possible, place the waterer in the outside runs, especially for waterfowl. This helps to keep the humidity level lower inside the coop. **PowerPoint Slide 27.**

D. Source of Light:
1. Windows placed on the southside of the coop will also be a good source of light and warmth in winter and a good source of ventilation in summer. **PowerPoint Slide 28.**

E. Ventilation:
   1. Ample air movement without a draft is essential. **Ventilation** allows fresh air to bring in oxygen while excess moisture, ammonia or carbon dioxide are removed as the stale air moves out of the house. Dampness and ammonia build-up are a sign that there is not enough ventilation. For small coops windows or vents on one side of the house usually provide plenty of ventilation. Failure to insulate or ventilate properly causes moisture to accumulate on the walls and ceiling in cool weather. Poultry can handle cold very well if they are dry. However, cool and humid conditions can create many health problems. Locate openings on the side away from prevailing winds. The south or east side is usually best. **PowerPoint Slide 29.**

As a final activity for this lesson, have students create their own livestock facility for one of the animals discussed. Students can draw their facility, create it using other materials, or if available create it on the computer. Be sure to have students include all aspects of a quality livestock facility.

Review/Summary. Use the student learning objectives to summarize the lesson. Have students list the items needed in a proper cattle facility. Then, discuss facilities needed for sheep and goats. Finally have students explain proper facilities for poultry.

Application. Application can involve student activity with the provided labs.

Evaluation. Evaluation should focus on student achievement of the objectives for each lesson. Various techniques can be used, such as performance on the application activities. A sample written test is attached.

Answers to Sample Test:

Part One: Matching

1 = e, 2 = a, 3 = d, 4 = b, 5 = f, 6 = c

Part Two: Completion

1. 1.5 meters
2. young calves, dry cows
3. space
4. ventilation

Part Three: Short Answer

1. Keep animals clean
2. Provide labor friendly collection
3. Dispose of waste in a responsible manner

Sample Test 1-1 Name_____

Test

Part One: Matching

Instructions. Match the term with the correct response. Write the letter of the term by the definition.

a. Cold housing
b. Proper ventilation
c. Flat milking barns
d. Warm housing
e. Intensive grazing
f. coop

_____ 1. When cows are on pasture as graze for 24-48 hours and are then moved to another pasture.

_____ 2. A building that is not heated and is kept cold during the winter.

_____ 3. A building that is heated and is kept warm during the winter.

_____ 4. Needed for proper poultry growth.

_____ 5. Housing unit for poultry.

_____ 6. Barns where dairy are milked in their stall.

Part Two: Completion

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

1. Fencing needs to be _____ meters or higher and have only 10 – 13 centimeters between strands for sheep and goats.
2. Calf hutches are used for _____ _____and open sheds are commonly found housing young stock or _____ _____.
3. Always make sure you have enough _____ for all animals to be comfortable.
4. Temperature control, disease problems, temperature, and excess moisture can all be controlled by _____.

Part Three: Short Answer

Instructions. Provide information to answer the following question.

All manure handling systems should serve three functions:

1.
2.
3.

LS: 1-1 Name_____

Lab Sheet

Regulations for the Disposal of Manure

Purpose:

To research regulations and concerns when dealing with manure.

Procedure:

Write a two-page typed report addressing the following concerns and any others you would like to address.

What regulations are there in your area on disposal of manure?

What regulations are there nationally on disposal of manure?

Why do we have these regulations?

What uses are there for manure?

Is regulation of manure disposal necessary or not in your opinion?