

## Lesson B6–1

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# Determining Livestock Facility Needs

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**Unit B.** Animal Science and the Industry

**Problem Area 6.** Meeting Environmental Requirements of Animals

**Lesson I.** Determining Livestock Facility Needs

### **New Mexico Content Standard:**

**Pathway Strand:** Animal Systems

**Standard:** V: Identify environmental factors that affect an animal's performance.

**Benchmark:** V-D. Develop efficient procedures to produce consistently high- quality animals, well-suited for their intended purposes.

**Performance Standard:** 4. Design facilities appropriate for the production of a given species of animal.

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

1. Describe facility needs for beef cattle.
2. Identify facility needs of swine.
3. List and explain facility needs of sheep and goats.
4. Discuss facility needs for dairy cattle.

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

Ensminger, M. E., *The Stockman's Handbook*. Danville, Illinois: Interstate Publishers, Inc. 1992

Lee, Jasper S. *Introduction to Livestock and Companion Animals 2nd Edition*. Danville, Illinois: Interstate Publishers, Inc. 2000

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

**Other Resources.** The following resources will be useful to students and teachers:

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

Internet keywords: livestock facility, swine facility, dairy facility, beef facility, and horse facility

## List of Equipment, Tools, Supplies, and Facilities

Writing surface  
Overhead projector  
Transparencies from attached masters  
Copies of student lab sheet

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

Cold housing  
Flat milking barns  
Intensive grazing  
Milking parlors  
Warm housing

**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. 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 beef cattle.

**Anticipated Problem:** What facilities are needed to raise beef?

- I. Individual needs for specific facilities will depend on what production system you are in.
  - A. The first thing to consider when raising beef is the location of the farm or ranch. You must make sure that you have access to water, roads, electricity, windbreaks, and all other necessary amenities.
  - B. You should build facilities where they can be expanded or changed to meet future needs.
  - C. Fences need to be sturdy to keep animals in. They can be electric, wooden, vinyl, or barbed wire. 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.
  - 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. Upright silos, feed rooms, trench silos, and metal storage bins all work well, depending on what feed you are storing.
  - G. You will also need equipment to work with your animals. It is much safer for both the producer and the animal to have corrals. You should place corrals where cattle can be easily loaded onto trailers.
  - H. In addition to corrals, you should have head gates for tagging, vaccinations, and other treatments of cattle.
  - I. Buildings should protect cattle from both heat and cold. Make a list of reasons to build and make sure the final building meets all the needs. There are several options when building. You may do the building yourself, hire it done, or buy a prefabricated building. Placement should consider prevailing winds, accessibility to water, and space requirements.

*Use The Stockman's Handbook to determine specific space requirements of beef cattle.*

**Objective 2:** Identify facility needs of swine.

**Anticipated Problem:** What facilities are needed to raise swine?

- II. Swine production facilities require proper location, construction, and maintenance. All factors should above all consider the type of production being done.
  - A. The facilities are important because they determine how hogs will be raised.

1. There are three main types:
  2. Enclosed confinement buildings provide a completely controlled environment and if properly maintained, works on minimal labor requirements.
  3. Open buildings with sloped concrete floors also work well to raise swine. Automatic watering and feeding is generally used in these buildings.
  4. Pastures and dry lots are used, but they are getting less common. Protection from the weather needs to be provided with this setup.
- B. Buildings need to be useful for their intended purpose. A farrowing barn for example must contain a nursery.
1. There are three main areas to consider:
  2. Temperature control, disease problems, temperature and excess moisture can all be controlled by ventilation.
  3. Waste management is a major concern to promote good health and comply with regulations on manure disposal. Make sure you have manure storage as well as a place to dispose of manure.
  4. Buildings should be easy to clean. If the facility is difficult to clean, it will be done less often and require more time from the producer.
- C. Location of your facilities is important to consider, especially if you live close to housing areas. You should always build where you will later have room to expand if necessary.
- D. Fencing is only important when pasturing your hogs. Strong fences that are at least 3 feet tall should be built with sturdy gates.
- E. Spending the extra money to get strong feeding and watering equipment is important because swine are hard on it. You will be more efficient if your equipment is easy to clean and automated.
- F. As with all animals, consider how many animals you plan to raise so there is enough space for them to be comfortable.

*Use The Stockman's Handbook to determine specific space requirements of swine.*

**Objective 3:** List and explain facility needs of sheep and goats.

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

- III. Since sheep are hardy animals, they don't require as much protection from the environment as other animals. Sheep are less expensive to raise because they do not require costly shelters. There are many things that you will need to raise them.
- A. Housing for goats and sheep will vary with operations, but barns are usually built so they are open to the south. You will need bedding, troughs, feeders, and waterers all in accessible areas. Free stall facilities are built for does that are milking. Loose or open housing is used for kids and yearlings. Any goat kept where they can get to other goats should be dehorned.

- B. Fencing needs to be 60 inches or higher and have only 4–5 inches 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.
- C. Depending on the operation, you might also need showing and grooming equipment, corrals, loading chutes, and pregnancy testing cradles to name a few.
- D. Always make sure you have enough space for all animals to be comfortable.

Use *The Stockman's Handbook* to determine specific space requirements of sheep.

**Objective 4:** Discuss facility needs for dairy cattle.

**Anticipated Problem:** What facilities are needed to raise dairy?

- IV. Facilities and equipment are very important to the efficiency of your dairy operation. Housing, milking systems, feeding equipment, and manure facilities are the most important factors to consider.
  - A. Housing protects both the animals and humans. Since dairy operations are very labor intensive it is necessary to also consider your needs for a comfortable environment. **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. **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.
  - B. Milking facilities are essential to dairy production. **Flat milking barns** are barns where dairy are milked in their stall. **Milking parlors** are concrete structures where cows come into to be milked. Milking parlors are built to increase efficiency, decrease labor, and improve working conditions and sanitation.
  - C. Feeding systems are important to dairy operations. Efficiency, cost, and location is important when considering where to store feed. Many types of feed must be stored including corn, silage, haulage, 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. **Intensive grazing** is when cows are on pasture as 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.
  - 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
- 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.

Use LS: B6–1A to research manure disposal concerns.

**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 taught over with a different approach. Questions provided in recommended textbooks may also be used to help review.

**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 = c

### Part Two: Completion

1. 60
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

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# Test

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## Lesson B6–1: Determining Livestock Facility Needs

### Part One: Matching

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

- |                    |                       |                      |
|--------------------|-----------------------|----------------------|
| a. Cold housing    | c. Flat milking barns | e. Intensive grazing |
| b. Milking parlors | d. Warm housing       |                      |

- \_\_\_\_\_ 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. Concrete structures where cows come to be milked.
- \_\_\_\_\_ 5. 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 \_\_\_\_\_ inches or higher and have only 4–5 inches 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.

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## **Lab Sheet**

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### **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?