

UNIT II - HOME AND FARMSTEAD PLANNING

Lesson 2: Arranging a Farmstead

Competency/Objective: Arrange a farmstead.

Study Questions

1. How does the direction of the layout affect farmstead planning?
2. How does topography affect farmstead planning?
3. How does wind affect farmstead planning?
4. How does the potential of the natural resources base in comparison to environmental impact affect the farmstead plan?
5. What is the effect of the type and size of business on farmstead planning?
6. How do services and utilities affect farmstead planning?
7. How do neighborhoods affect farmstead planning?
8. What is the impact of regulatory agencies on farmstead planning?

References

1. *Agriculture Structures (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1999, Unit II.
2. Activity Sheet
 - a) AS 2.1: Farmstead Planning
 - b) AS 2.2: Planning a Farmstead

UNIT II - HOME AND FARMSTEAD PLANNING

Lesson 2: Arranging a Farmstead

TEACHING PROCEDURES

B. *Review*

Lesson 1 addressed factors to consider when selecting a site for a home. Preparing a farmstead plan also takes care and forethought. The variety and complexities of modern farms make a good farmstead plan a requirement for successful operation. This lesson outlines many factors that must be considered to devise a good plan. Forming a good farmstead plan also requires research and expert help. Local University Extension offices are an excellent resource for information and referrals.

C. *Motivation*

Discuss some key factors that affect the farmstead plan. Factors for possible discussion are service area, wind, water quality and quantity, surface and watershed drainage, current and future production volume requirements, and codes and regulations.

D. *Assignment*

E. *Supervised Study*

F. *Discussion*

1. Question the class about factors affecting the direction of farm layout and list them on the board.

How does the direction of the layout affect farmstead planning?

- a) Farmstead planning often involves orienting activities in relation to one another and the farm's effect on surrounding areas.
 - 1) Structures associated with related activities, such as feed storage facilities and feed lots, should be located near one another.
 - 2) Noise, dust, pollution potential, and insects associated with agricultural activities must be anticipated and directed away from residential areas.
 - b) Orientation of structures according to the four directions is usually done to minimize the effects or take advantage of natural elements such as sun or a prevailing wind.
 - c) Orientation of individual buildings is a function of the type of building, type of enterprise, and desired outcome of the structure's use.
2. A plastic display of an area of land (perhaps borrowed from a geography instructor) is a very good visual tool to use when teaching this topic. Taking the class outside and showing them local topographical features around the school also provides a good introduction to this topic. Ask students to describe features of the topography that may affect farmstead planning.

How does topography affect farmstead planning?

- a) Drainage and pollution are of particular concern when considering topography.
 - 1) Drainage
 - (a) Drainage of water from rain, snow, ice melt, or farm operations should be away from structures, with a slope of 3 to 5 percent.
 - (b) This slope will allow for drainage without promoting erosion.

- (c) Water can also damage structures if allowed to drain into them, which is why a slope away from structures is advisable.
 - 2) Pollution
 - (a) Understanding a given area's topography will provide an understanding of the direction and routes of drainage.
 - (b) Structures such as dams, holding ponds, or routing channels are sometimes effective in controlling the effects of pollution in a given area.
 - b) Topography is also a significant factor in regard to accessibility for machinery, water retention, and soil components.
- 3. Show students pictures of the "dust bowl" of the 1930s. (Pictures may be available in history books in the school library or on the Internet). Ask them to define wind erosion. Discuss how wind affects farmstead planning.

How does wind affect farmstead planning?

- a) A key to success in dealing with wind erosion is wind breaks, which are rows of trees strategically planted and spaced to interrupt a prevailing wind.
 - b) Wind must also be considered when planning for enterprises that involve odors or airborne contaminants.
 - 1) Prevailing winds can be an advantage if they blow away from an area where windborne contaminants may cause problems.
 - 2) If a prevailing wind is carrying contaminants into an inappropriate area, the most effective solution is to locate the source of the odors or contaminants at a distance from other activities.
 - c) Heating and cooling requirements are affected by wind.
 - 1) Prevailing winter winds from the north are of considerable concern when evaluating heat requirements.
 - 2) Orienting farm structures to take advantage of wind for ventilation can help in meeting cooling requirements as well as in enhancing livestock health.
- 4. Natural resources are often necessary for the success of a farmstead. Ask students to list some natural resources. After several have been named, ask students to list some effects farming can have on the resources listed.

How does the potential of the natural resources base in comparison to environmental impact affect the farmstead plan?

- a) Natural resources are material sources of wealth that occur in a natural state, such as timber, water, or mineral deposits.
 - b) They must be used in compliance with the codes and regulations governing their use that are designed to protect the environment and its inhabitants.
 - c) This focus on regulations greatly affects farmstead planning.
 - 1) Any fuel, waste products, or chemicals used in amounts considered to be at a commercial level will be regulated.
 - 2) Of particular concern is any contaminant that can enter and be spread in the watershed, contaminating valuable natural resources.
- 5. Discuss different types of agricultural enterprises and how the size of the operations affects the farmstead plan. List key points on the chalkboard.

What is the effect of type and size of business on farmstead planning?

- a) Farm acreage needs
 - 1) Different enterprises require acreage suitable for their needs.
 - 2) Careful consideration of future needs must take place during the first stages of planning if possible.
 - b) Number and type of structures
 - 1) The number and type of structures on a farmstead also must be adapted to the specific operation's needs.
 - 2) When planning a farmstead, an individual must do research to find information concerning the type of structures needed for a particular operation.

- (a) Trade associations dealing with a particular type of enterprise
 - (b) University Extension Services
 - (c) Contract producers in the swine or poultry industries who work closely with the processors with whom they contract to develop plans for farmsteads and structures designed for efficient operation
 - c) Number and type of regulations
 - 1) Research is required to determine what regulations might affect each aspect of the farmstead being planned.
 - (a) County planning and zoning office
 - (b) County Extension offices
 - 2) As a rule, larger operations require more and larger structures and produce more waste. They are therefore subject to more regulations.
 - d) Financing options
 - 1) Structures are expensive to construct and maintain, so careful planning is required when determining structural needs.
 - 2) Obtaining professional advice concerning farm financing is recommended; in areas where agricultural enterprises are common, professional accountants experienced in financing should be available.
 - e) Sources and amount of water
 - 1) Water needs should be anticipated and evaluated in the planning stage.
 - 2) The types of water sources and amounts they can deliver must be considered as well.
 - 3) Planning for structures should take into account convenient access to water supplies and drainage of wastes away from water sources.
 - 4) Laws and regulations may affect the options for water for the operation.
 - f) Waste management
 - 1) Waste management must be planned according to the codes and regulations governing the enterprise.
 - 2) Waste management structures such as holding tanks or lagoons are critical for the environment and must be planned carefully.
6. Utilities and services take many forms. Discuss some of the more common ones with the class and list them on the chalkboard. Ask the students some of the ways utilities and services affect the farmstead.

How do services and utilities affect the farmstead plan?

- a) Utilities of an acceptable level and dependability must be available at a cost that will allow profitable operation.
 - b) Services that affect the particular enterprise in question must be available and consistent enough to allow profitable operation.
 - 1) Electricity
 - 2) Passable roads
 - 3) Fire protection
 - 4) Ambulance services
 - 5) Telephone services
 - c) Utilities and services must be considered when arranging the layout of structures.
 - 1) Overhead electrical lines should be located away from trees if possible, since falling limbs may break lines.
 - 2) Underground lines tend to be more dependable.
 - 3) If water is supplied by a municipal source, structures must have suitable hookup access.
7. Discuss with students how a farming operation can affect neighbors or how a neighboring operation could affect the farmstead. After introducing this topic, ask students if they know of any situations where an operation affected a neighbor either positively or negatively.

How do neighbors affect farmstead planning?

- a) Laws and regulations, particularly zoning laws, will dictate much of what is acceptable when planning in regard to the neighborhood surrounding the farmstead.
- b) The potential for zoning changes and urban encroachment in the future should be taken into account.

- c) Some concerns need to be considered, such as pollution and runoff that may affect neighbors, especially when planning structures that involve or alter watershed activity.
 - d) Fences that separate properties and are used by both parties are worthy of consideration when forming a farmstead plan.
8. Discuss the purposes and functions of the regulatory agencies discussed below. The main focus of the EPA and DNR--protecting the environment--should be emphasized. Have students complete AS 2.1 and AS 2.2.

What is the impact of regulatory agencies on farmstead planning?

- a) Regulatory agencies designed to protect the environment, its inhabitants, and natural resources have a direct effect on most farm enterprises.
- b) Compliance with regulations for such things as pollution control can be costly and involve considerable labor.
- c) Regulations may limit the size an enterprise can operate at successfully.
- d) Regulations also work to ensure that the environment is safe for everyone.
- e) Two major regulatory agencies provide guidelines and answers to questions for farmstead planning.
 - 1) Environmental Protection Agency
 - 2) Department of Natural Resources

G. ***Other Activities***

Have students research a particular code or regulation that affects farmstead planning in their area. What is the regulation designed to protect? How does it affect farmstead planning?

H. ***Conclusion***

Developing a good farm plan is a large undertaking that requires a lot of thought and research into the particulars of the enterprise. Because of the variety and diversity of enterprises, every plan will be different. The information presented in this lesson outlines questions to be asked during the planning process so that the farmstead can operate successfully.

I. ***Answers to Activity Sheets***

J. ***Answers to Evaluation***

- 1. c
- 2. c
- 3. d
- 4. a
- 5. Department of Natural Resources and the Environmental Protection Agency
- 6. Wind breaks
- 7. Answers may include any two of the following: electricity, passable roads, fire protection, ambulance services, and communications services.
- 8. Answers may include any of the following: laws and regulations, particularly zoning laws, that dictate much of what is acceptable in regard to the neighborhood; the potential for zoning changes and urban encroachment; pollution and runoff that may affect neighbors; or fences that separate properties and are used by both parties.

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following are of particular concern when considering topography?
 - a. Wind, natural resources
 - b. Wind, drainage
 - c. Drainage, pollution
 - d. Natural resources, water retention
2. Structures associated with related activities should be located:
 - a. Close to roads.
 - b. Next to sources of water.
 - c. Close to each other.
 - d. Next to power lines.
3. When considering environmental impact on natural resources, what is of particular concern?
 - a. Wind erosion
 - b. Altering topographical features
 - c. Airborne contaminants
 - d. Contaminants in the watershed
4. When planning a farmstead, which of the following is not affected by the size and type of business?
 - a. Prevailing winds
 - b. Financing option
 - c. Waste management
 - d. Acreage needs

Complete the following short answer questions.

5. What are two major regulatory agencies that may affect a farmstead?
 - a.
 - b.
6. What is one way to deal with wind erosion?
7. What are two types of services that are important to consider during farmstead planning?
 - a.
 - b.
8. What is one thing to consider when planning a farmstead that takes neighbors into account?

Name _____

Objective: Understand a farmstead plan.

1. How does the direction of the layout affect the farmstead planning?

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4. How does the potential of the natural resources base in comparison to environmental impact affect the farmstead plan?

5. What is the effect of the type and size of business on farmstead planning?

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Lesson 2: Arranging a Farmstead

Name _

Planning a Farmstead**Objective:** Prepare a farmstead plan.

Even the simplest of farmstead plans can be very complex. The goal of this activity is to understand the questions to be asked and how they may be answered, particularly by locating and identifying regulatory agencies that affect decisions.

Develop a farmstead plan of your ideal farm, using the study questions as a guide. Sketch the layout of your ideal farmstead, and then briefly explain how your farmstead addresses the discussion questions in paragraph form on an attached paper. Be sure to include how you designed your farmstead in relation to topography, wind, natural resources, type and size of business, service and utilities, the home, neighbors, and how government agencies would possibly view your plan. Be creative!!!

