

Instructor's Guide
to Accompany
Exploring
Agriscience
Fourth Edition

Ray V. Herren



Australia • Brazil • Japan • Korea • Mexico • Singapore • Spain • United Kingdom • United States

**Instructor's Guide to Accompany Exploring
Agriscience, 4th edition
Ray V. Herren**

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CHAPTER 1

The World of Agriscience

Student Objectives

After studying this chapter, the student should be able to:

- Discuss why agriculture is important in our everyday lives.
- Explain why agriculture is such a broad and diverse industry.
- Explain why agriculture is a science.
- Summarize the reasons why agriculture contributes to the wealth of the nation.
- List and discuss the uses of plants.
- List and discuss the uses of animals.
- Contrast agricultural exports and imports.
- Discuss the processing and distribution of agricultural products.

Answer Key

True/False

1. T
2. T
3. F
4. F
5. F
6. T
7. T
8. T
9. F
10. T

Multiple Choice

1. B
2. A
3. C
4. C
5. A
6. C
7. B
8. B
9. A
10. B

Discussion

1. Medicine is related to agriculture because for good nutrition, humans must obtain plenty of wholesome food. Ecology is related because of the tremendous impact agriculture has on the environment.
2. Agriculture jobs involve such diverse occupations as marketing specialists, chemical manufacturers, food inspectors, and research scientists.
3. Plants are important in our daily lives because a large portion of our food comes from plants. Plants also supply us with clothing. The houses we live in also come from plants. A large portion of the medicines we use comes from plants as well.
4. Companion animals are an ever-increasing part of the animal industry. Dogs are raised for pets, and they are also trained to help visually impaired people. Animals such as goldfish and cats are raised for companions also.
5. In order to raise healthy animals, animals have to be fed. They need medicine and pesticides; fencing has to be produced; buildings and facilities have to be built to house the animals; trailers and trucks are needed to transport the animals; and buyers, brokers, inspectors, and processors are all required.

6. Animals are raised for food, used for work, used as companion animals, and used in the production of leather.
7. Agriculture is the most important of all sciences because we depend on agriculture for the food we eat.
8. Chewing gum comes almost entirely from plants. The gum is made from a substance called chicle that comes from the sap of a tree. The sugar used to sweeten it comes from sugar beets or sugar cane. Even the flavoring, such as mint, comes from a cultivated plant.
9. Food and fiber processing is a huge part of agriculture because consumers want products that are as nearly ready to eat as possible.
10. All the knowledge we have of living things has only three applications: medicine, ecology, and agriculture.

CHAPTER 2

The History of Agriculture

Student Objectives

After studying this chapter, the student should be able to:

- Describe the importance of agriculture.
- Discuss how agriculture was necessary to the development of civilizations.
- Tell how the cotton industry brought wealth and created problems in the United States.
- Describe how the cattle industry developed.
- List some of the inventions that had an impact on agriculture.
- Discuss how scientific research helped develop agriculture.
- Define the land grant concept of education.
- Explain how the land grant institutions have helped shape agriculture.

Answer Key

True/False

1. T
2. F
3. T
4. T
5. F
6. T
7. T
8. T
9. F
10. T
11. F
12. T

Multiple Choice

1. A
2. C
3. C
4. B
5. A
6. B
7. A
8. C
9. B
10. A
11. B
12. C

Discussion

1. Cattle grazing areas were far away from the centers of population. Therefore, cattle producers had a problem getting their livestock to the market.
2. John Deere invented the first steel plow. The plow was thinner and lighter than previous plows and made cultivation of the land much easier.
3. The Land Grant Act made public land and funds available for universities to teach practical methods of food and fiber production.
4. The land grant concept states that the purpose of a land grant university is to teach, conduct research, and carry the new information to the people in the state through the Cooperative Extension Service.
5. Due to the demand for and popularity of cotton, it became the economic center of the South.
6. Agriculture provides us with the materials to satisfy our basic needs for food, clothing, and shelter. Agriculture is the basis of civilization. All other arts and sciences first depend on the development of agriculture within a civilization before they can exist.
7. Before a civilization could exist and prosper, it first had to have a strong agricultural system. As long as the people had to spend all their time hunting and gathering food or trying to grow food, they had little time for anything else. Efficient agriculture allowed less people to raise the same amount of food for the population. Therefore other people had time to protect the population, create works of art, construct buildings, and so on.
8. The cotton gin consisted of spikes on a revolving drum that passed through slots and separated the lint from the seeds. A rotating brush then removed the lint from the seeds.
9. Scientific research created dramatic advances in agriculture. No longer were advancements made through trial and error, which took a great deal of time and money. Instead, advancements were made according to specific methods that made the research more efficient and reliable. Scientific research continues to produce new technologies that make agriculture more efficient.
10. Cotton became so important because of its popularity as a fiber. It was needed in great quantities in Europe because of the clothing and cloth that could be made from the fiber. Clothing made from cotton was more comfortable and more affordable, thus everyone wanted it. As a result, southern farmers produced mainly cotton. Few other commodities were produced, because the whole economy of the South was wrapped around the production of cotton.

CHAPTER 3

Soil: The Origin of Life

Student Objectives

After studying this chapter, the student should be able to:

- Explain why agriculture and all of life depend on the soil.
- Explain the difference between organic and inorganic soil.
- Discuss the carbon cycle.
- Discuss the different ways soils are formed.
- Contrast the differences between acidity and alkalinity and the effect of each on the soil.
- Explain the concept of a soil ecosystem.
- Conceptualize the balance of organisms in the soil.