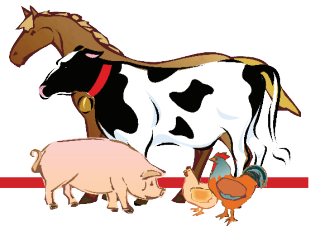
AGsploration
The Science of Maryland Agriculture

UNIVERSITY OF MARYLAND EXTENSION

Overview of Lessons



Animal Agriculture

1. Food, Fiber, and More from Animals

Learn about the varied uses of animal byproducts or coproducts with an emhasis on agricultural animals produced in Maryland.

- Identify common items made from byproducts.
- Make homemade glue from milk.

2. Wild and Wooly

Learn about sheep and goats and the various products that come from them.

- Compare and contrast photos of sheep and goats.
- Perform a forensic activity by comparing wool and other fibers under a microscope.

3. Moo Who?

Differentiate between beef and dairy cattle and observe how each type has changed over time.

- Identify important physical characteristics of beef and dairy cattle.
- Analyze photographs of cattle for evidence of beef or dairy characteristics.

4. Animal Digestion

Compare and contrast the digestive systems of ruminant (4-compartment stomach) and monogastric (single stomach) animals, observing similarities and differences.

- Identify digestive organs and different types of digestive systems by coloring diagrams.
- Compare and contrast human and animal digestive systems.

5. Undressing the Mystery of Meats

Learn about the types of beef, pork, and lamb meat cuts and products and the role that these important agricultual commodities play in one's diet and in Maryland's economy.

- Sort photos of cuts of meat based on the animals they come from.
- Simulate what a butcher does to process an animal for meat.

6. Milk in Motion: A Dynamic Dairy Experiment

Learn about the dairy industry and dairy, the fat content of milk, and dairy projects.

- Use food coloring and detergent to explore the properties of different types of milk.
- Interpret labels of dairy products for nutrition information.
- Make butter and ice cream.

7. Poultry: Feed Basics for a Growing Bird

Understand the stages of chicken growth and processing and the importance of mixing feed to achieve balanced nutrition.

- Arrange the stages of broiler chicken growth in order.
- Simulate mixing feed rations and calculate the percentage of feed ingredients.

8. Horses and Evolution

Understand how horses evolved over time and compare/contrast the ways that different types of horses are used today.

- Analyze a horse evolution timeline.
- Understand selective breeding by comparing and contrasting horse breeds through building models.

Plant Agriculture

9. It's Not Just Dirt

Learn about soil as a resource: components, uses, and renewability.

- Compare and contrast samples of different soils.
- Create a soil profile by letting a mixture of soil and water settle.

10. Send in the Sun: A Look at Photosynthesis

Trace the process of photosyntheses and observe lack of photosynthesis over an extended period of time.

- Trace the stages of photosynthesis and identify the substances needed for plants to produce food.
- Conduct an experiment to determine how lack of light affects plant leaves.

11. Grains: The Whole Story

Understand the important food and non-food uses of the major grains grown in Maryland.

- Learn the importance of grains and how to identify different types of grains.
- Analyze food packages to determine the nutritional value of grain products.

12. Soy: The Magic Bean

Explain the role of soybeans and other legumes in making nitrogen available for use by plants, animals, and humans.

- Compare legumes and grains; trace the stages of the nitrogen cycle.
- Identify common products used by humans that contain soybeans.

13. Buy Close to Home, Purchase Locally Grown

Simulate a farmers market to learn about the benefits of locally grown food.

- Simulate a farmers market by assuming the role of a vendor or chef or farmer.
- Interpret the MyPlate dietary guidelines by creating a balanced meal.

14. Amaizeing Corn

Develop an understanding of the uses of corn in feeding humans and livestock, fueling our cars, and many other applications.

- Identify the three types of corn grown in the world.
- Learn the major uses of corn and its byproducts.
- Make a bio-plastic from corn byproducts.

Agriculture and the Environment

15. Food for Thought: Agriculture in the Chesapeake Bay Watershed

Develop an understanding of the size and importance of the Chesapeake Bay watershed and recognize Maryland agriculture as integral to human life in the watershed.

- Analyze a map of the watershed and identify the states that contribute water to the Chesapeake Bay.
- Conduct research and prepare a presentation about crops grown in Maryland.

16. Do You Get My (Non)Point? Modeling Pollution in a Watershed

Develop an understanding of ways in which the activities of humans can cause nonpoint pollution within a watershed.

- Build a watershed model, develop and pollute it, and observe the effects of rainfall.
- Identify ways in which individuals and families can reduce nonpoint pollution.

17. Conservation Choices: How Farmers and Developers Protect the Bay

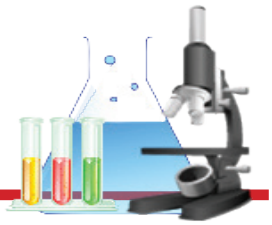
Understand how Maryland farmers and developers use conservation techniques to reduce environmental damage.

- Match photographs and descriptions of soil conservation techniques.
- Design a conservation plan for an area experiencing erosion and water quality problems.

18. Who Lives Here? Species of the Bay Region and Watershed

Identify traits of several Chesapeake Bay and watershed species and characterize how these species interact positively or negatively with humans/agriculture.

- Match photographs with facts about wildlife species living in the Bay watershed.
- Identify ways that species have a positive or negative effect on agriculture.
- Create a Bay food web diagram.



19. Persistent Pests

Explain how repeated pesticide exposure can cause an insect population to develop resistance over time due to natural selection.

- Simulate changes in an insect population exposed to pesticides.
- Explore alternatives to repeated pesticide usage.

20. Something Fishy: Aquaculture in Maryland

Students will understand aquaculture's role in providing a sustainable seafood supply for an increasing human population in the Chesapeake Bay watershed.

- Simulate the effects of seafood harvesting on populations of aquatic organisms.
- Identify the types of aquaculture and pros/cons of each.

21. What's in Your Genes?

Learn to predict offspring traits or characteristics using genetics.

- Use a checklist to identify personal dominant and recessive genetic traits.
- Use Punnett squares to predict the results of genetic crosses.

22. Food Safety is for Everyone

Develop increased awareness of the causes of foodborne illness and how it can be prevented.

- Use beads to simulate bacteria growth.
- Compare the effectiveness of different handwashing techniques using fluorescent gel or powder.

23. Down and Dirty with Biosecurity

Gain an understanding of biosecurity and develop a biosecurity plan for a hypothetical livestock production facility.

- Assess animal health by looking for evidence of health and disease in photographs.
- Create a biosecurity plan for a livestock facility.

24. Feeding Our Future

Learn that DNA is the molecule responsible for the inheritance of traits and will understand that selective breeding and genetic engineering are used to develop desired traits.

- Understand that DNA is found in all the food we eat.
- Extract DNA from food and observe what large quantities of DNA look like to the naked eye.
- Research genetically modified organisms (GMOs) in agriculture.

For More Information About AGsploration

www.extension.umd.edu/agsploration

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