Contents

NAME: _____

Before You Read

Agricultural Waste

1. **Think about a farm. What types of waste do you think might be produced on the farm?**

_____

_____

_____

2. **Use a dictionary to look up the word AGRICULTURAL. Write the definition on the lines below.**

The definition of **agricultural** is:

_____

_____

_____

3. **Match word to its definition. You may use a dictionary to help you.**

1	disease	the natural home of a living thing	A
2	habitat	substances that living things need to live and grow	B
3	environment	a harmful condition in which the body is not working properly	C
4	bacteria	a resource that is replaced as fast as it is used	D
5	nutrients	tiny living things	E
6	renewable	everything that surrounds you	F

Reading Passage

NAME: _____

Agricultural Waste

What is agricultural waste?

We all need food to eat. Most of the food we eat comes from farms. Vegetables, grain, animals, and fruit are grown on farms around the world. But farms produce more than foods. They also produce a lot of waste. Waste from farms is called **agricultural waste**.

When you think of waste from a farm, you may first think of left over plant parts. In most cases, the vegetables, grains, and fruit that we eat are just a small part of a plant. After farmers pick the useful parts, a large amount of plant matter is left over. But plant matter is only one type of agricultural waste. Some farms use large amounts of **toxic**, or harmful, substances to kill plant pests and diseases, including:

- **pesticides**, substances that kill insect pests;
- **herbicides**, substances that kill plants, such as weeds;
- **fungicides**, substances that kill fungi, which can cause plant diseases.

Farms also use fertilizers, substances that make plants grow faster. When farmers water plants, some of these substances wash off. The water that does not get taken up by plants runs into creeks and streams, where these substances can harm the environment.

STOP

Describe the meaning of the term *agricultural waste.* Give three examples of agricultural waste.

_____

_____

How does agricultural waste cause harm?

When pesticides, herbicides, and fungicides wash off of farms and into the environment, these substances can be taken up by plants and animals. They can kill insects and plants in natural habitats and cause food chains to break down.

When fertilizers get into natural habitats, they can cause **algae** to grow out of control. The algae can block sunlight, and take up a lot of **oxygen**. This makes it hard for plants and animals to survive.

After You Read

NAME: _____

Agricultural Waste

1. **Circle the word True if the statement is true. Circle the word False if it is false.**

a) Stalks and leaves can be agricultural waste.
True **False**

b) Pesticides help plants grow faster.
True **False**

c) Ethanol is a fuel made from unused parts of corn plants.
True **False**

d) Biomass fuel is made from petroleum oil.
True **False**

e) Organic crops are grown without pesticides, herbicides or fungicides.
True **False**

2. **Put a check mark (✓) next to the answer that is most correct.**

a) Which of these is used to kill insects that eat plants?
- ○ **A** pesticide
- ○ **B** fertilizer
- ○ **C** ethanol
- ○ **D** fungicide

b) Which type of agricultural waste can be made into fuel?
- ○ **A** herbicide
- ○ **B** biomass
- ○ **C** nutrients
- ○ **D** algae

c) What gets used up when the same crop is planted in the same place every year?
- ○ **A** oxygen
- ○ **B** nutrients
- ○ **C** biomass
- ○ **D** pesticides

d) Which of these could cause algae to grow out of control?
- ○ **A** fungicides
- ○ **B** biomass
- ○ **C** pesticides
- ○ **D** fertilizer

NAME: _____

After You Read

Agricultural Waste

3. **How would you explain sustainable farming in your own words?**

_____

_____

_____

4. **Do all types of agricultural wastes create the same problems? Use examples to explain your answer.**

_____

_____

_____

Extension & Application

5. Learn more about **organic farming**. Use the Internet or library resources to find answers to the questions below.

- How do organic farms differ from other farms?
- What are the rules for being labeled organic?

Then, look for nearby organic farms using your local business directory. Call the farm and ask to schedule a visit or a phone talk with a farmer. During your talk, ask the following questions:

- What types of crops do you grow on your farm?
- How do you protect your crops from being eaten by insects?
- How do you control plant diseases?
- How do you make sure your plants get enough nutrients?
- Write **at least two** more questions that you would like to ask when you talk to the farmer.

Create a slide show presentation to share what you learned with your class. The first slide should contain the name of the farm that you called or visited. The second slide should contain information about what the farm grows. Additional slides should contain answers to all of the questions you asked. Include photographs or images.

For each slide, write a note of what you want to say when you show that slide.

Give your slide show presentation to your class!

Hands-On Activity # 1

Biomass Product Fair

In this activity, you and your classmates will learn about the many different products that can be made from unused plant parts on farms, or BIOMASS.

FIRST, use the Internet or library resources to research a list of **10 to 20** different products that can be made from biomass. Include fuels, building materials, gardening supplies, and everyday items.

SECOND, have each student in your class choose a product from the list to learn more about. Students may work alone or in teams.

Once you have choosen your product, **research** answers to the following questions:

- What types of agricultural waste are used to make the product?
- How is the product made?
- Do farmers make money selling their waste to the manufacturers of the product?
- What is the product used for?
- Can the product replace similar products made from nonrenewable resources?

If possible, try to get a sample of your product. If that is not possible, get photographs or advertisements.

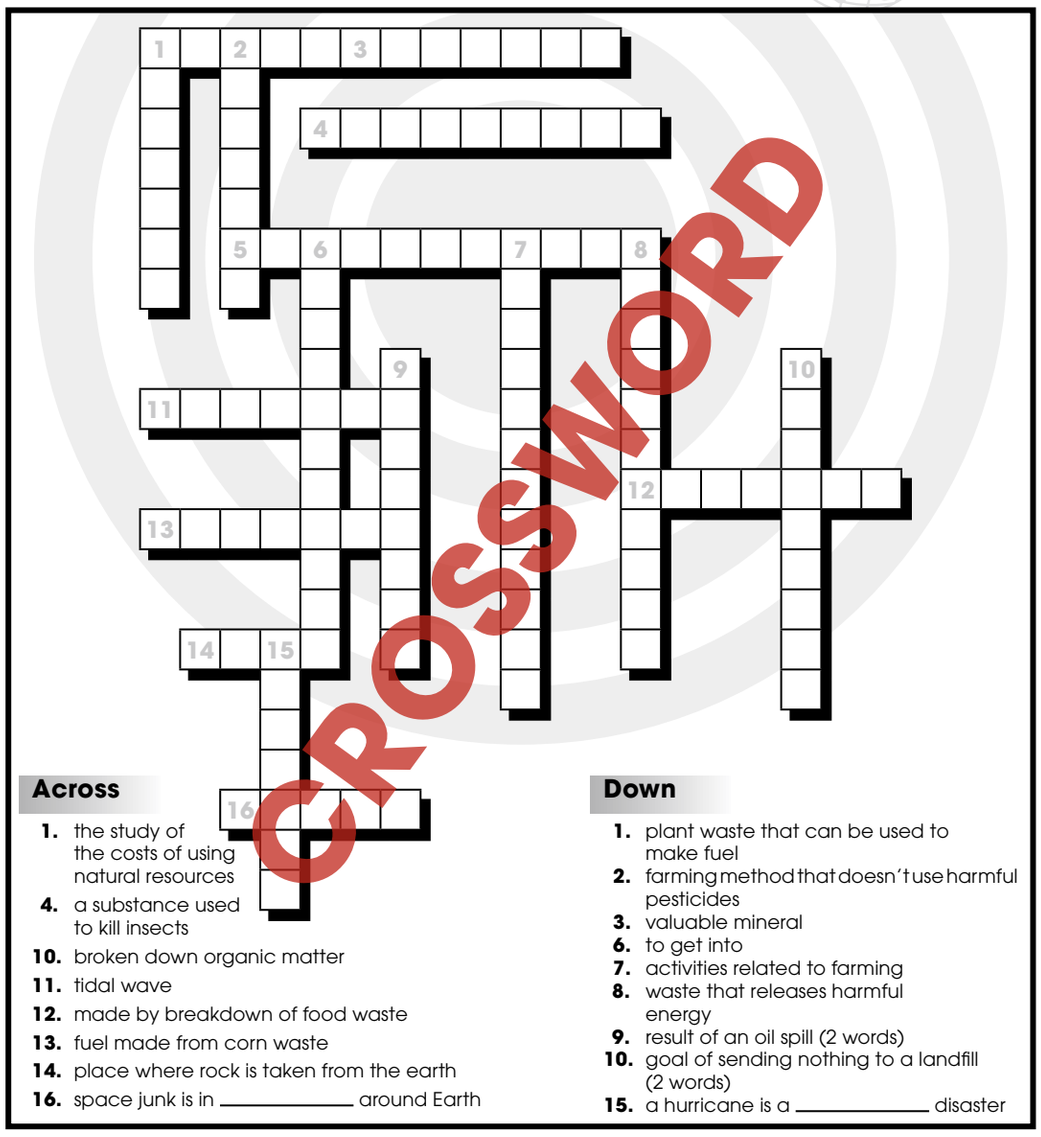
Make a **poster presentation** that answers all of the questions above and contains photographs of the product and the waste materials used to make it.

THIRD, set up a **Biomass Product Fair** in your classroom or common school area, such as the auditorium. Display the posters and products on tables, and have students stand near their displays to answer questions. Invite students, teachers, parents, and other members of your school community to walk through the Biomass Product Fair.

After You Read

NAME: _____

Crossword Puzzle!



Across

1. the study of the costs of using natural resources
4. a substance used to kill insects
10. broken down organic matter
11. tidal wave
12. made by breakdown of food waste
13. fuel made from corn waste
14. place where rock is taken from the earth
16. space junk is in _____ around Earth

Down

1. plant waste that can be used to make fuel
2. farming method that doesn't use harmful pesticides
3. valuable mineral
6. to get into
7. activities related to farming
8. waste that releases harmful energy
9. result of an oil spill (2 words)
10. goal of sending nothing to a landfill (2 words)
15. a hurricane is a _____ disaster

After You Read

NAME: _____

Comprehension Quiz

25

Part A

8

Circle the word True if the statement is true. Circle the word False if it is false.

1) Corn stalks are an example of agricultural waste
   True **False**
2) Hazardous mining waste can contaminate water supplies.
   True **False**
3) When oil is spilled from a tanker, it spreads out on the ocean floor.
   True **False**
4) High-level radioactive waste can remain harmful for thousands of years.
   True **False**
5) Solid waste from Hurricane Katrina is still a problem.
   True **False**
6) About 300 pieces of space junk can be found orbiting Earth.
   True **False**
7) Bio-economics is the study of how much money it costs to dispose of organic wastes.
   True **False**
8) Incinerators can cause air pollution.
   True **False**

Part B

4

Put a check mark (✓) next to the answer that is most correct.

1. **Which of these is high-level radioactive waste?**
   - ○ **A** uranium ore
   - ○ **B** X-ray machines
   - ○ **C** cancer medicines
   - ○ **D** used fuel rods
2. **Which of these substances are found in waste from metal mines?**
   - ○ **A** acids
   - ○ **B** oil
   - ○ **C** sewage
   - ○ **D** fungicides
3. **Which of these is an example of agricultural waste?**
   - ○ **A** cyanide
   - ○ **B** acids
   - ○ **C** fertilizer
   - ○ **D** aluminum
4. **Which facility will help a community practice zero waste?**
   - ○ **A** biogas
   - ○ **B** incinerator
   - ○ **C** landfill
   - ○ **D** nuclear plant

SUBTOTAL: /12

Agricultural Waste

(Farmer Spraying Pesticide on Rice Field)

NAME: _____

After You Read

Agricultural Waste

3. How would you explain sustainable farming in your own words?

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EZ

3.

Answers will vary

Answers will vary

12

4.

Answers will vary

Answers will vary

13

5.

Answers will vary

Answers will vary

14

Answers will vary

11

15