BIOPLASTIC PACKING PEANUTS

Overview

Packing peanuts are made from plant starch found in the seed of grain sorghum. Students will be able to learn about different kinds of packing peanuts while conducting fun science experiments. This lesson takes a look at how packing peanuts relate to environmental issues and our lives.

Suggested Grade Level:
4th-6th

Time:
1 hour and 30 minutes

Subjects:
Science

Objectives

1. Compare and contrast biodegradable and non-biodegradable resources.
2. Learn the plant parts of grain sorghum.
3. Discuss pros and cons of environmental choices in our everyday lives.
4. Students will identify the part of the grain sorghum seed that is used to create a packing peanut.

Background Information

Packing peanuts were introduced in 1965. Approximately 95% of a packing peanut's volume is air. There are two types of packing peanuts; biodegradable and non-biodegradable. The biodegradable type are starch, or plant based and breakdown easily. At postal stores they come in different colors including green, white and pink. These different colors represent the different types of packing peanuts. The white peanuts are made up of at least 70% non-recycled materials and are the most common. A green color indicates that at least 70% of the peanut's content is recycled material. When a chemical to reduce static cling has been added to packing peanuts, they will have a pink color. Non-biodegradable packing peanuts are made from styrofoam.

Styrofoam takes up about 25 to 30 percent of the space in a landfill. Packing peanuts that are shiny and in the shape of a figure eight are made from fossil fuels, produced by plants millions of years ago. Packing peanuts that are dull colored and are the shape of a cheeto are made from plant starch. These peanuts have a "lick and stick" quality that makes them capable of breaking down with the presence of moisture and the ability to adhere to each other. You can find these at postal stores or a variety of colors in the art section of a discount store.

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Vocabulary

Biodegradable plastics: Made from traditional petrochemicals or fossil fuels that are engineered to be broken down quickly in the landfill

Non-biodegradable plastics: Plastics that cannot be easily brokem down by light, heat, water or bacteria

Eco/recycled plastics: plastics that are repurposed or made from recycled plastic materials

Bioplastic: Polymers made from renewable resources such as plant starches made from the endosperm of the plant seed

Petrochemical: A chemical made from petroleum or fossil fuel which is considered to be a non-renewable resource

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Materials for Activities 1-3

- Grain sorghum
- Labels for plant parts
- Card stock
- Colored biodegradable packing peanuts
- Non-biodegradable packing peanuts
- Clear cups
- Water
- Toothpicks

Activity 1 - Labeling a Grain Sorghum Plant

Procedures

1. Give each student a piece of cardstock paper.
2. Using the biodegradable packing peanuts, have them lick and stick the peanuts to make a model of a grain sorghum plant (use the pink color for the sorghum head).
   *use the attached diagram as a reference
3. Have them label the plant model with labels and toothpicks.

Activity 2 - Packing Peanut Experiment

Procedures

1. Fill the clear cups with water.
2. Have them hypothesize what will happen when you place the two types of packing peanuts in water.
2. Have the students place a biodegradable packing peanut in the clear cup of water.
3. Next have them put a non-biodegradable peanut in a different cup of water.
4. Have all of the students watch them and then discuss the differences.

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Packing Peanut Experiment

Name:_____

Hypothesis:

Packing Peanut A	Packing Peanut B

Conclusion Questions:

1. After observing what each packing peanut did in the cup of water, does this support or reject your hypothesis?

2. What happened to the biodegradable packing peanut? What happened to the non-biodegradable packing peanut?

3. Which packing peanut is better for the environemnt? Why?

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Activity 3 - Plan of Action

In this activity, students will create and present a Packing Peanut Consumer Plan of Action to help protect the environment. After deciding their plan of action, the students will like to take, they will present the plan of action to key players.

Procedures

1. Group students into groups of 5.

2. Have the groups develop a plan of action.

3. Have each group present their plan of action to the class.

4. Class members will vote on the top two ideas.

5. The class will discuss and develop ideas to present to key players.

6. The students will pick 2 students to represent the class and present their plan of action to the key players to gain support and needed resources.

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Our Packing Peanut Consumer Plan of Action

Names of team members:_____

Plan of Action Steps:

1.

2.

3.

4.

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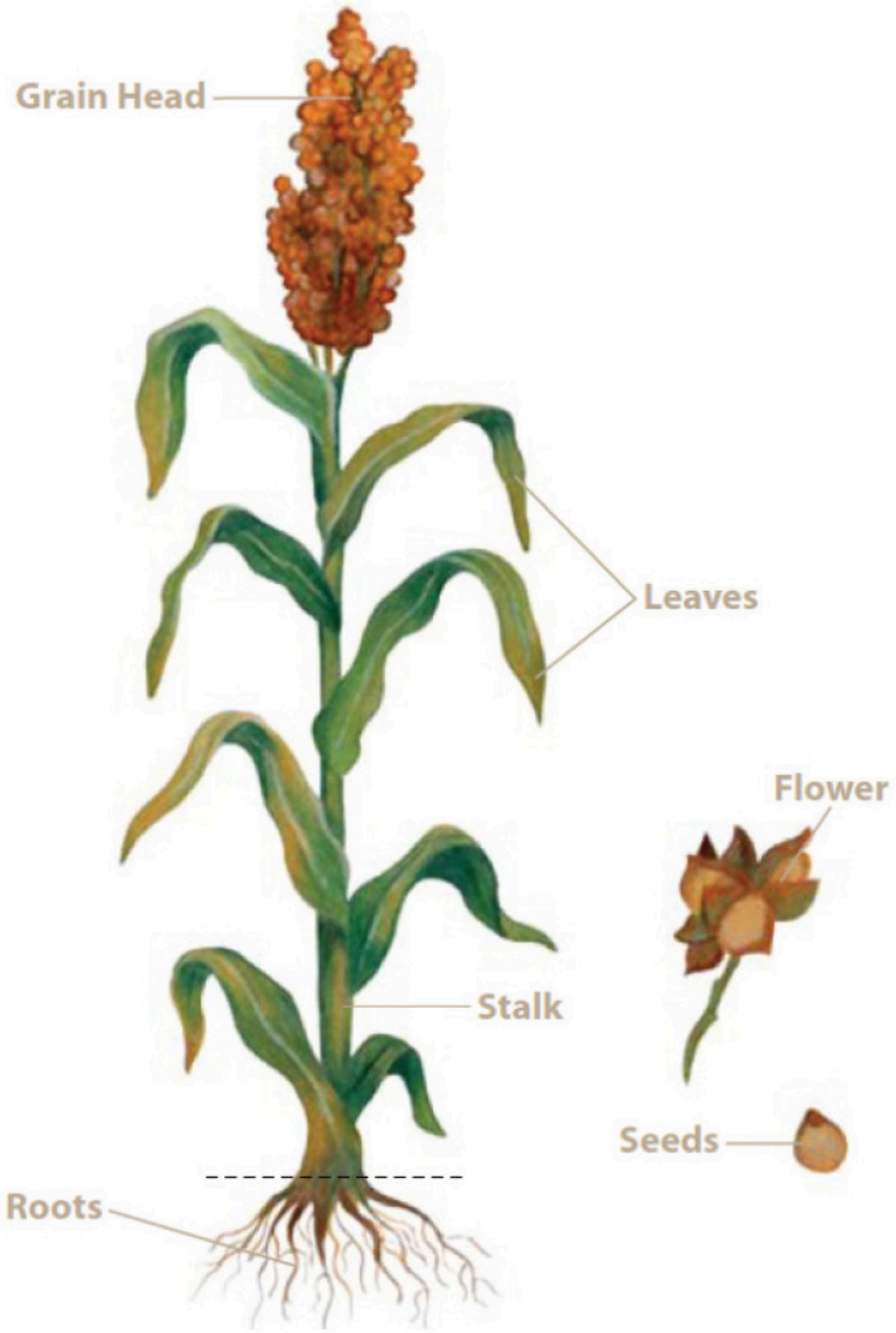
Grain Sorghum Model



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