

BIOENERGY CAMP

DAY ONE: BIO-BOTTLES



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Bio-Bottles

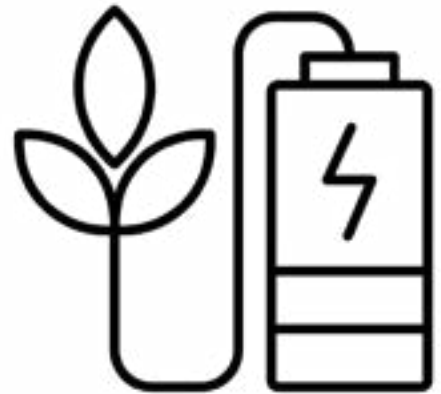
Welcome to Bioenergy Camp day one!

Today we are going to learn about biofuels. Biofuels are fuels made up of material from plants and animals. These materials are referred to as biomass and can be composed of various living organisms.

Why are biofuels important?

Biofuels help us to reduce our reliance on fossil fuels, which are made from plants and animals that died a long time ago. Fossil fuels are a nonrenewable resource, which means they are limited in supply and cannot be replaced as quickly as we use them.

Biofuels are made from renewable resources. Which means their biomass components can be replenished for a useable supply. Biofuels can be made from a wide variety of crops, like corn and switchgrass for example.



Ethanol is one example of a biofuel made from corn. Ethanol is produced by grinding corn into a grain and making it into a sugar. Through a process called fermentation, this sugar develops into ethanol.

Today, you are going to see fermentation in action! Fermentation is a very important step in the process of making ethanol. Before you start your bio-bottles experiment, make sure you watch the ethanol production video.

Bio-Bottles

Materials:

- 5 Water Bottles
- 2 Cups Warm Water
- Funnel
- 5 Balloons
- Baking yeast
- Flour
- 400 mL Warm Water
- 0.4 g Sugar
- 0.4 g Stevia
- 0.4 g Splenda
- 0.5 g Vinegar



Procedure:

- Label bottles 1-5
- Using your funnel, pour 12mL of warm water into each bottle.
- Add 0.7g of flour to each bottle and stir.
- Add 0.6g of yeast to each bottle and stir.
- Add 0.4g of sugar to bottle #1.
- Add 0.4g of Stevia to bottle #2
- Add 0.4g of Splenda to bottle #3
- Add 0.5g of vinegar to bottle #4
- Do not add anything to bottle #5, this is our control group.
- Stir each bottle again for approximately 1 minute.
- Place and secure a balloon over each bottle.
- Record observations in the sheet provided.

Observation	After 5 Minutes	After 10 Minutes	After 15 Minutes	Overnight
Bottle #1 Sugar				
Bottle #2 Stevia				
Bottle #3 Splenda				
Bottle #4 Vinegar				
Bottle #5 Control				