

Teacher Page: Case Study- Is Ethanol the Answer? (p. 333-334)

Unit: Unit 7

Grade Level Indicator:

Description:

Time: 25 minutes

Materials: Book page 333-334

Procedure:

Warm-up:

Instructional Strategies:

Assessment: Grade question, student participation

Variations: Do questions orally with teacher led instruction,

Interdisciplinary Connection:

Sample Data/ Answers: The answer key follows the student page.

Name _____ Date _____ Period _____

Case Study- Is Ethanol the Answer? (p. 333-334)

1. What is ethanol made from? _____

2. What percent of Brazil's motor vehicles use ethanol? _____
3. What are some harmful environmental effects of using sugarcane to produce ethanol? _____

4. What crop is used to make ethanol in the United States? _____
5. What is the net energy yield for ethanol produced in the U.S.? _____

6. If all the corn in the U.S. was used to make ethanol how long would it last to meet the same demand as gasoline? _____
7. If the corn used to make the ethanol that fills a 25 gallon tank were used to feed one person, how long would they be able to eat for? _____
8. Would switching to biofuels accelerate or decelerate projected climate change? _____
9. What are some advantages of using switchgrass to produce biofuels? _____

10. What is a disadvantage of using cellulosic ethanol? _____

Key

1. Plants such as sugarcane, corn, and switchgrass, and from agricultural, forestry, and municipal wastes.
2. 45%
3. CO₂ emissions from oil and gasoline needed to produce sugar cane, very high soil erosion after sugarcane plantations are harvested and large water use
4. Corn
5. 1.1-1.5 units of energy per unit of fossil fuel
6. 30 days
7. One year
8. Accelerate
9. Disease and drought tolerant can be grown without the use of nitrogen fertilizers on land unfit for crops
10. Difficult and costly to break down the cellulose and extract the glucose needed to make ethanol