


After reading the Colorado Reader on *Corn: It's Feed. It's Fuel. It's Food. It's Everything!*, complete this worksheet. Please answer in complete sentences.

1. Locate the county you live in on the map of Colorado on page 1. Is corn grown in your county? If so, how many bushels are harvested per year?



**Why shouldn't
you tell a secret
on a farm?**

**Because the
corn has ears!**

2. The average yield of one acre of corn is 176.4 bushels per acre. One bushel of corn is equal to 56 pounds. How many pounds of corn can be harvested from 10 acres of corn?

3. What makes bioplastic and biofuel renewable resources?

4. What three things does a seed need to germinate?

5. Name the 4 Rs farmers use when applying fertilizer.

6. Using the chart on page 5, can you predict what would happen to a corn plant that was planted on May 1 if Colorado experienced a hard frost on May 19?

7. What would happen to the corn plant that was planted on May 1 if Colorado experienced a severe drought in the month of July?

Using the chart on page 5, draw a complete corn plant at R1 stage and label these parts: ear, leaf collar, roots, silk, stalk, tassel.

Making Bioplastic

Students will examine renewable and nonrenewable resources with a hands-on exploration of bioplastics made from corn.

Materials:

- 1 tablespoon (24g) cornstarch
- 2 drops corn oil
- 1 tablespoon (15 mL) water
- 2 drops food coloring
- Sandwich-sized resealable plastic bag
- Tablespoon measuring spoon
- Microwave

Renewable resources are either naturally reproduced at a sustainable rate or they can be produced in agriculture at a rate equivalent to the demand or need. **Nonrenewable resources** are made naturally by the Earth but do not renew themselves fast enough for people to count on having the resource for an indefinite period of time. Although plastic is typically considered to be a nonrenewable resource because it is made from petroleum, there is a method of making plastic that can be renewable. **Bioplastics** are made from biological materials—plant starches, cellulose, oils, or protein.

Procedure: Part 1

1. Measure 14 g (1 tablespoon) of cornstarch into your plastic bag.
2. Add 15 ml (1 tablespoon) of water to the cornstarch.
3. Add 2 small drops of corn oil to the mixture in your bag.
4. Add 2 drops of food coloring to the mixture in your bag.
5. Seal the bag and squish it gently to mix everything together.

Describe the mixture in your plastic bag: _____

How does it feel when you slowly squish the bag? _____

Does it feel the same when you squeeze the bag quicker/harder? _____

Is your mixture a solid or a liquid? _____

Procedure: Part 2

6. Microwave your mixture on high power for 20 seconds. Be sure to leave the bag open a tiny bit so that steam can escape. Be careful, the bioplastic will be hot!
7. Let it cool for several minutes. While it is cooling answer the questions below.

What does your new substance look like? How is it different from the mixture you started with? _____

If your plastic is cool, knead it with your hands. What does it feel like? Describe its other properties. _____

What could you make with your bioplastic? What couldn't you make? Why? _____

What is used to make bioplastic? _____
