

Corn fermentation in a bag

How do we know fermentation is occurring?

Materials

- Snack-sized zip lock bags
- Feedstock (corn meal, cornstarch, cracked corn, corn syrup, or corn stover powder)
- Warm water
- Amylase Enzyme Powder
- Dry active yeast
- 2 small graduated cylinders
- Teaspoon measuring spoon

Directions

1. In a snack-sized resealable zipper bag, combine 1 teaspoon of feedstock choice, 1/2 teaspoon amylase enzyme powder, and 1 teaspoon of yeast.
2. Add 50 mL (1/4 cup) of warm water and zip the bag closed, removing as much air as possible.
3. Mix gently. Lay the bag on a flat surface and watch for results – observe initial results in 15 minutes.
4. *Warning:* As the yeast produce carbon dioxide, the bag will expand—it may even pop! Be sure to monitor the bag and release the gas if it becomes too inflated.

Using a simple sugar (monosaccharide) as a feedstock will yield the most rapid results.



Questions to discuss about the bags:

1. If the bag is inflating, what is filling it up?
2. Are you observing fermentation? How do you know?
3. How did the yeast respond to different kinds of “food”? Why do you think there is a difference?
4. How can we change dent corn into simple sugar? What process does commercial ethanol production use to create simple sugars from complex carbohydrates?

Ingredient	Recommended	Actual
Yeast	1 tsp	
Food source	1 tsp	
Warm water	50 mL	
Food chosen		Start time

Adapted from <https://www.glbc.org/education/classroom-materials/fermentation-bag>