Watching Mold Grow

Grade 1

- ***Next Generation Science Standard: K-2-ETS1-1***
  Define a simple problem that can be solved through the development of a new or improved object or tool.

Application: With food processing, foods stay fresh longer and less food is wasted. This experiment gives students a chance to see how preservatives help extend our food supply.

Materials for the class:
bread with preservatives
bread without preservatives
two paper plates, one labeled "Plate 1" and the other labeled "Plate 2"
spray bottle with water
document camera (optional)

Materials for each student:
science notebook

Did you know?
By 2050, the world population will reach 9 billion. Food production must increase 70% to meet that growing need!

Introducing the lesson:

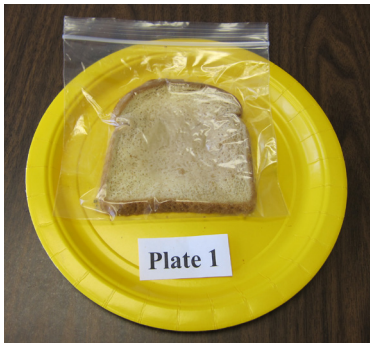
Farmers around the world grow the food we enjoy every day. There are three basic steps to get food from the farm to the dinner table:

- *Production* involves growing the food on a farm.
- *Processing* is what happens to the food once it is ready to be picked. This could involve packaging, canning, freezing, or drying it. Preservation is a type of processing that includes finding ways to keep food fresh longer.
- *Transportation* involves taking the food to the store.

Lesson:

1. Bread is a staple in our lives. **Ask students:**
   - How often do you eat toast for breakfast or bring a sandwich for lunch?
   - When you go to the kitchen to make toast or a sandwich, what's the one item you must have? *Bread!*
   - Have you ever opened the bag of bread to find that it has gotten moldy?

2. Talk about the fact that scientists have created special ingredients called *preservatives* to keep food fresh longer. Preservatives help keep our food safe by preventing bacteria from growing, keeping food fresh longer, and preventing waste.



3. Show students the two types of bread, one with preservatives and one without. Put a slice of bread with preservatives in a plastic bag and place it on Plate 1. Then put a slice of bread without preservatives in a plastic bag and place it on Plate 2. Spritz each slice of bread with an equal number of sprays of water. Seal the plastic bags. Use your document camera to allow students to view the plates, or pass the plates around the room. **Ask students:**
   - Do the slices of bread look similar?
   - What do you predict will happen to the bread on Plate 1 if we let it sit out? What about Plate 2? Have students record their predictions in their science notebooks. Then have them draw and label the two plates in their notebooks.

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4. Find an out-of-the way spot in your classroom where the plates won't be disturbed. Cover them with a towel. Every several days, show students how the bread has changed and, if desired, spray the slices with more water. (Remind students to look closely; mold can be different colors, including white.) Have students record their observations each time. **Ask students:**
   - Why do you think one slice of bread has mold on it and the other doesn't? *Preservatives help to keep food fresh longer.*
   - How do preservatives affect the amount of food we have? *Less waste means we get to eat more of the food we grow; we don't have to throw as much away.*

5. To extend the activity, experiment with additional slices of bread in different locations, such as a warm area, a cold area, and a moist area. Does the mold grow faster or more slowly? Do the slices of bread with and without preservatives react the same way?

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