

## Leaf Disk Lab

### Introduction

When people buy fruit and vegetables, they usually want it to be as “fresh” as possible. How do you know if fruit or vegetables are fresh?

Use your knowledge of photosynthesis to determine what brand of spinach is more “fresh” – organic or non-organic.

### Materials:

- 1% baking soda solution (in water)
- Plain water
- Liquid dish soap
- Plastic syringe (20-65 mL)—no needle!
- Plastic spoon or straw (for stirring)
- Spinach leaves
- Hole punch
- 1 large beaker or plastic cup
- Graduated cylinder
- 2 small beakers or plastic cups
- Timer
- Light source
- Paper towels



### Procedure

**Solutions are safe to handle without gloves. Wear Goggles!**



1. Punch out 10 leaf disks from the non-organic spinach and 10 leaf disks from the organic spinach.
2. Label both cups with your initials. Label one cup “organic” and one cup “non-organic.”
3. Measure 100 mL of 1% sodium bicarbonate solution into each plastic cup. Add three drops of soap to each cup and stir without creating bubbles.
4. Remove all oxygen gas from the 10 organic leaf disks according to the demonstration.
5. Pour the solution containing the disks back into the plastic cup. Make sure they sink to the bottom.
6. Repeat steps 4 and 5 for the non-organic leaf disks.
7. Place both cups under a light source and begin timing the experiment.
8. Observe what happens to the leaf disks over time. Record your observations/data in the chart on page 4. After each time check, tap the side of the beaker to make sure the disks are not “sticking” to the container bottom.

