

## How do Solar Panels affect the Environment below?

**Objective:** Describe, investigate, and share results on the impact of solar panels to the environment where plants would grow.

### NGSS Science and Engineering Practices:

- Ask questions that can be investigated within the scope of the school laboratory, research facilities, or field with available resources and frame a hypothesis based on a model or theory.
- Construct, analyze, and/or interpret graphical displays of data to identify linear and nonlinear relationships.
- Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources.
- Communicate scientific information in writing and/or through oral presentations.

#### 1. What is a testable question?

Examples of testable questions from our researchers:

- Will native grasses grow better when broadcast or seed drilled?
- Can we water cherry tomatoes less under the panels and keep yield the same?
- Which wildflower mix will do the best under the solar panels?

#### 2. Write down some testable questions you would like to investigate.

Here is a list of sensors that are available to use:

- Infrared Surface Thermometer
- Soil Moisture Meter (piezometer) and Soil Temperature meter
- Wind Speed Meter (anemometer)
- Light Meter and Air Thermometer

#### 3. Create a revised testable question with a group of 3-4 people.

#### 4. Now design your experiment!

- What will you be changing in your experiment (independent variable)? \_\_\_\_\_
- What will you be measuring in your experiment (dependent variable)? \_\_\_\_\_
- What will stay the same in each trial (3 constants)? \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_
- How many trials will you complete? \_\_\_\_\_

5. What do you predict will happen? What is your hypothesis?

6. Develop a table to display your data.

7. How did the environment under the solar panels change as you changed locations under the panels? Did this align with your predictions before the experiment? Explain.

8. How can you explain the differences in your data as you changed locations under the panels? What scientific principles are relevant? Explain.

9. What real world implications could your experiment have? Would this be valuable to farmers, solar developers, scientists? Explain.