

Instructional Scenario

Keep the Lights On



Course/Duty Area: Introduction to Plant Systems/Evaluating the Environmental Stimuli that Affect Plant Growth and Development

Scenario:

A student is planning to conduct an agriscience research project on several plants grown in the school greenhouse. The student is interested in understanding how light influences plant growth. The student asks the agricultural education teacher for permission to use a few plants for their experiment so they may enter the project in the Agriscience Fair.

Big Question:

What roles do light duration, intensity, and quality play in plant growth and development?

Focused Questions:

- Why is light quality important?
- When is a balanced light spectrum necessary?
- What role does photoperiodism play in plant reproduction and growth?
- Why can most plants not be grown in the dark?
- What role do phytochromes play in seed germination and in the transition from vegetative to reproductive growth?

Student Project or Outcome:

Place one plant in a standard location with access to light and place the other in a room or covered box with limited or no light exposure. Over the course of a week, observe and record the differences in growth, color, and overall health. Evaluate how light influences photosynthesis and describe how plants convert light energy into chemical energy. Vary the location and/or light sources to test for light duration, intensity, and their effects on plant growth and development.

Materials

- National FFA 2b. Prequalifying Scoresheet Divisions 3-6 (Grades 9-12) Rubric
- Two identical plants
- A room or covered box
- Light source
- Notebook
- Writing utensil (pencil or pen)

Project-Based Assessment:

- National FFA 2b. Prequalifying Scoresheet Divisions 3-6 (Grades 9-12) Rubric (*included*)

Teacher Resource: [National FFA Agriscience Fair](#)

Scenario submitted by Dr. Jessica M. Jones, Tunstall High School, Pittsylvania County Public Schools