



GROWING PLANTS IN COMPLETE DARKNESS

AND STUDYING ETIOLATION

Focus Question: How does growing plants in complete darkness affect their growth and appearance?
Key Idea: Plants need light to grow normally. Without light, plants become etiolated—tall, weak, pale, and less healthy.

BACKGROUND

Plants use light for photosynthesis and for signals that help them grow strong, green leaves and sturdy stems.

When plants grow in complete darkness, they stretch toward any light they can sense. This response is called etiolation.

HYPOTHESIS

If a plant is grown in complete darkness, then I think it will

because _____

PROCEDURE

- Plant the Seeds:** Plant the same number of seeds in each pot. Cover lightly with soil and water gently.
- Set Up the Light Pot:** Place one pot in a location with natural or bright room light.
- Set Up the Dark Pot:** Place the second pot in a lightproof box. Wrap the box with aluminum foil or cover with black paper. Tape all seams and openings so no light can get in.
- Care for Both Plants:** Water both pots the same amount each day. Do not open the dark box except when taking measurements.
- Observe Over Time:** Observe both pots for 7–14 days. Record your observations and measurements.

OBSERVATIONS (Describe what you see)

Light Pot:

Dark Pot:



SAFETY REMINDERS

- Keep the growing area clean to prevent mold.
- Do not eat any part of the plants.
- Wash hands after handling soil and plants.

GROWN IN
LIGHT



GROWN IN
COMPLETE DARKNESS



Example: Same type of plant,
different growing conditions.

MATERIALS

- Fast-growing seeds (e.g., bean, pea, sunflower, or radish)
- 2 small pots or cups with drainage holes
- Potting soil
- Water
- Cardboard box (lightproof)
- Aluminum foil or black paper
- Tape
- Ruler
- Notebook or worksheet (this sheet)
- (Optional) Camera or phone for photos

WHAT IS ETIOLATION?

Etiolation is the response of plants to growing in the dark. Common signs include:

- Tall, elongated stems
- Pale yellow or white color
- Small or no true leaves
- Weak, floppy growth



DATA TABLE (Example)

Day	Light Pot Height (cm)	Dark Pot Height (cm)	Observations (color, leaves, strength)
1			
3			
5			
7			
10			
14			

CONCLUSION

What happened to the plant grown in complete darkness?

Why do you think this happened?

What did you learn from this experiment?



Challenge: After the experiment, place the dark-grown plant in light. What changes do you observe over the next few days?