Where does a plant's mass come from?

Fictional sample · Grade 7 life science lesson pack, one 45-minute period

Photosynthesis and the cycling of matter · Standard: NGSS MS-LS1-6

A seed weighs less than a gram. A tree weighs tonnes.

Where did all that mass come from? Write your prediction in one sentence. Keep it: we will come back to it at the end.

Today you will be able to

1. Name what goes into photosynthesis and what comes out
2. Use evidence to explain where most of a plant's added mass comes from
3. Trace where the energy stored in sugar came from

Four words we need today

WORD	WHAT IT MEANS	EXAMPLE
Chloroplast	The part of a plant cell where photosynthesis happens	Found mostly in leaf cells
Chlorophyll	The green substance that absorbs light energy	Why leaves look green
Glucose	A sugar the plant makes and stores energy in	Used to build and fuel the plant
Carbon dioxide	A gas in the air that plants take in through leaves	We breathe it out

What goes in, what comes out

Inputs

Carbon dioxide (from the air) + water (from the roots) + light energy (from the Sun)

Outputs

Glucose (stored in the plant) + oxygen (released into the air)

Evidence: what changed after six weeks?

Practice data, invented for this lesson. Replace with your own class measurements.

MEASURED	START	AFTER 6 WEEKS	CHANGE
Dry soil in the pot	2,000 g	1,998 g	-2 g
Bean plant (fresh)	1 g	45 g	+44 g
Water added in total	-	1,800 mL	-

Turn and talk

The soil lost about 2 grams. The plant gained 44 grams. With your partner: what does the data say about where the plant's mass came from? Use the words input and evidence.

Where the energy goes

1. **Sunlight**
   Light energy reaches the leaf
2. **Glucose**
   The plant stores that energy in sugar
3. **Plant**
   Uses glucose to grow and live
4. **Animals**
   Get the energy by eating plants

Common mistake: plants eat soil

The misconception

"Plants get their food from the soil."

What the evidence says

The soil barely lost mass. Plants make their own food (glucose) from carbon dioxide and water, using light energy. Soil supplies water and small amounts of minerals.

Practice

1. Sort into inputs and outputs: oxygen, water, glucose, carbon dioxide, light energy
2. Using the data table: how much did the soil change compared with the plant? What does that suggest?
3. A classmate says, "Plants get their food from the soil." Write one sentence that uses evidence to respond.

Exit ticket

Answer on your slip before you leave.

1. Where does most of the mass a plant adds come from?
2. Where did the energy stored in glucose originally come from?

Teacher page: sources and checks

Remove this slide before sharing with students.

- Source: photosynthesis section of your adopted textbook
- Standard: NGSS MS-LS1-6 (nextgenscience.org)
- Diagram: leaf and chloroplast from the textbook, not AI-generated
- Data on slide 6: invented for practice unless replaced

- Equation has light energy as an input
- No slide says plants get food from soil
- Every sentence read aloud at grade 7 level
- No student names or records anywhere in the deck