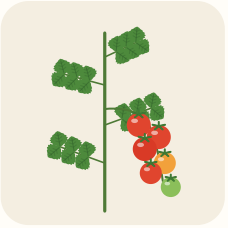
AGES 14–18 · TEACHER PAGE

The carbon cycle in a MAVA COMPOST

Students model carbon flows between the air, plants, waste and decomposers, then debate urban agriculture.



2 sessions of 55 min | MAVA : COMPOST

KEY QUESTION **Where does the carbon in our food scraps go?**

OBJECTIVES

1. Model carbon flows in a miniature ecosystem.
2. Link photosynthesis, respiration and decomposition.
3. Evaluate the benefits and limits of urban agriculture for the climate.

MATERIALS

- The school's MAVA COMPOST
- Class data: masses of scraps and harvests
- A compost thermometer (optional)
- The pupil sheet

CURRICULUM LINKS

NGSS	**HS-LS2-5**: Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon; **HS-LS2-3**: aerobic and anaerobic conditions.
NATIONAL CURRICULUM	**KS4 · Photosynthesis** as the key process for food production and therefore biomass for life.
IB MYP SCIENCES	Criterion **D** (Reflecting on the impacts of science)

LESSON STEPS

1 **Launch** 10 min	'The carbon in a carrot peel was in the air a few weeks ago. How did it get there, and where is it going?'
2 **Model** 35 min	On the MAVA COMPOST diagram, students name the seven numbered flows: photosynthesis, respiration, harvest, adding scraps, decomposition, mineral uptake.
3 **Measure** 15 min	Take the temperature at the heart of the compost: the heat comes from decomposers' respiration. A strong smell signals a lack of air, meaning anaerobic decomposition.
4 **Debate** 55 min	'Can urban agriculture help the climate?' Arguments for and against: transport, waste, water, scale of production. Each student writes a reasoned position.

ASSESS

A complete, labelled model; arguments that separate facts, estimates and limitations.

VOCABULARY

store, flow, photosynthesis, cellular respiration, decomposer, aerobic, anaerobic

EXTENSION

Estimate how much of the scraps' carbon returns to the air and how much stays in the compost.

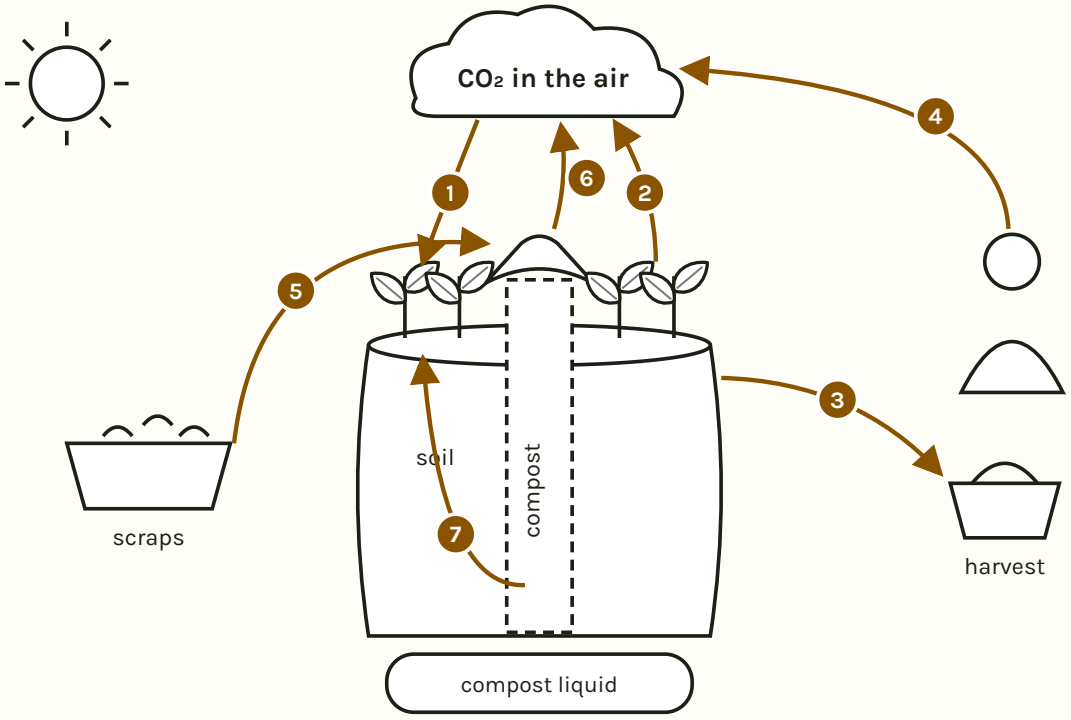
⚠ **Safety :** Gloves for handling compost, then wash hands.

AGES 14–18 · PUPIL SHEET

The carbon cycle in a MAVA COMPOST

NAME _____ CLASS _____ DATE _____

1 Name the seven numbered carbon flows.



Word bank : photosynthesis · respiration (twice) · harvest · adding scraps · decomposition · mineral uptake

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____

2 Debate: can urban agriculture help the climate?

MY POSITION _____

_____

ARGUMENT AND EVIDENCE _____

COUNTER-ARGUMENT _____

LIMITATION _____