SCIENCE EXPERIMENT

MAKING A MODEL OF THE NITROGEN CYCLE

Build a model to show how nitrogen moves through the environment.

Name: _____

Date: _____

Grade: _____

QUESTION

How does nitrogen move through living and nonliving parts of the environment?

HYPOTHESIS

I think _____

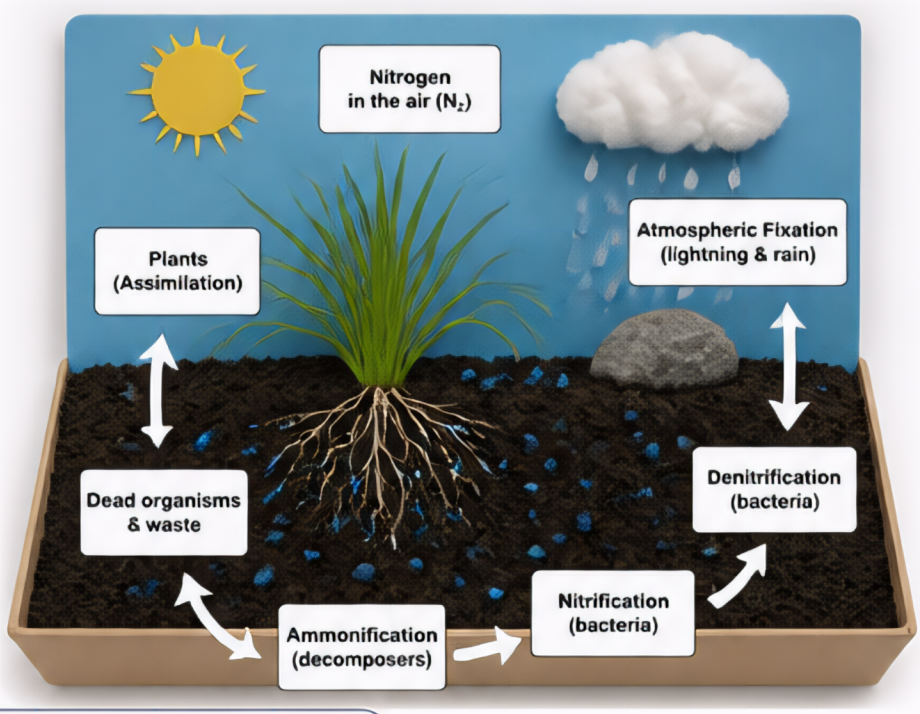
because _____

_____.

MATERIALS

- Shallow box or tray
- Soil or dirt
- Small plant or grass
- Small rock
- Cotton balls
- Blue beads or beans (to represent nitrogen)
- Labels or sticky notes
- Markers
- Spray bottle with water
- Clear plastic bag
- Tape or glue

EXAMPLE MODEL



PROCEDURE

1. Put soil in the tray.
2. Plant the small plant or grass in the soil.
3. Add a small rock.
4. Place cotton balls in the sky area for clouds.
5. Use blue beads or beans to represent nitrogen. Place some in the "air" (tape a few to the sky area) and some in the soil.
6. Add labels to show the parts of the nitrogen cycle (use the key on the right to help).
7. Use arrows to show how nitrogen moves between each part.
8. Spray a little water to show rain.
9. (Optional) Cover with a clear plastic bag to show the atmosphere.

NITROGEN CYCLE STEPS KEY

Nitrogen in the air (N_2): Most nitrogen is in the air we breathe.

Atmospheric Fixation: Lightning and rain help change nitrogen in the air into forms plants can use.

Assimilation: Plants take in nitrogen to grow.

Ammonification: Decomposers break down dead things and waste, returning nitrogen to the soil.

Nitrification: Bacteria in the soil change ammonia into nitrate.

Denitrification: Bacteria change nitrate back into nitrogen gas, returning it to the air.

OBSERVE

What do you notice about how nitrogen moves in your model?

_____

_____

ANALYZE

Which parts of the cycle are living (biotic)?

_____

Which parts are nonliving (abiotic)?

_____

Why are bacteria important in this cycle?

_____

CONCLUDE

What did you learn from making this model?

_____

_____

How could you improve your model?

_____

_____

THINK FURTHER: How would human activities (like farming or pollution) affect the nitrogen cycle?

_____