

Cycling Nitrogen

Standards of Learning

Science 6.9, LS.7

Objective

Students will:

- Investigate how living and nonliving components are dependent upon one another during the nitrogen cycle

Materials

- 1 poster or overhead with the nitrogen cycle diagram (Prentice Hall pp.726 is a good example)
- 1 pack of white note cards
- 1 copy of "The Nitrogen Cycle" at <http://soil.gsfc.nasa.gov/NFTG/nitrocyc.htm>

Background Knowledge

Nitrogen is an essential component of DNA, RNA and proteins. All living things require nitrogen to live and grow. Most nitrogen in the atmosphere is unavailable for use by organisms. Five main processes cycle nitrogen through the earth's atmosphere are nitrogen fixation, nitrogen uptake, nitrogen mineralization, nitrification, and denitrification. Nitrogen is 80% of the air we breathe, needed for plant growth, and a component in photosynthesis. Farmers rely on nitrogen in the form of fertilizer (organic or non organic) and nitrogen producing crops to keep the soil rich and balance to produce the best plant growth.

Procedure

1. Start at any point in the diagram by explaining the steps to the nitrogen cycle. It is a cycle so it does not matter where you begin.
2. On the back of a note card have the students write down the first word that you say that they are unfamiliar with. (Different students will have different words.)
3. Verbally get a few students to go through the cycle.
4. Get all students to briefly summarize the cycle on the front of the note card, and then cycle the note cards for classmate's approval.
5. Correct any misconceptions and students will have a nice little study tool.
6. Discussion questions:
 - How is nitrogen fixation a necessary part of the nitrogen cycle?
 - Where do nitrogen-fixing bacteria live?
 - What percentage of the Earth's air is nitrogen?

Extension

- <http://soil.gfc.nasa.gov/NFTG/nigrocyc.htm> Use page 2 of the NASA document to describe what is happening with the cycle. It is more detailed and an excellent real life application scenario.
- <http://www.neuse.ncsu.edu/nitrogen/index.htm>
- *Understanding Nitrogen in Our World* by International Plant Nutrition Institute

