

12-9 What is the Nitrogen Cycle?

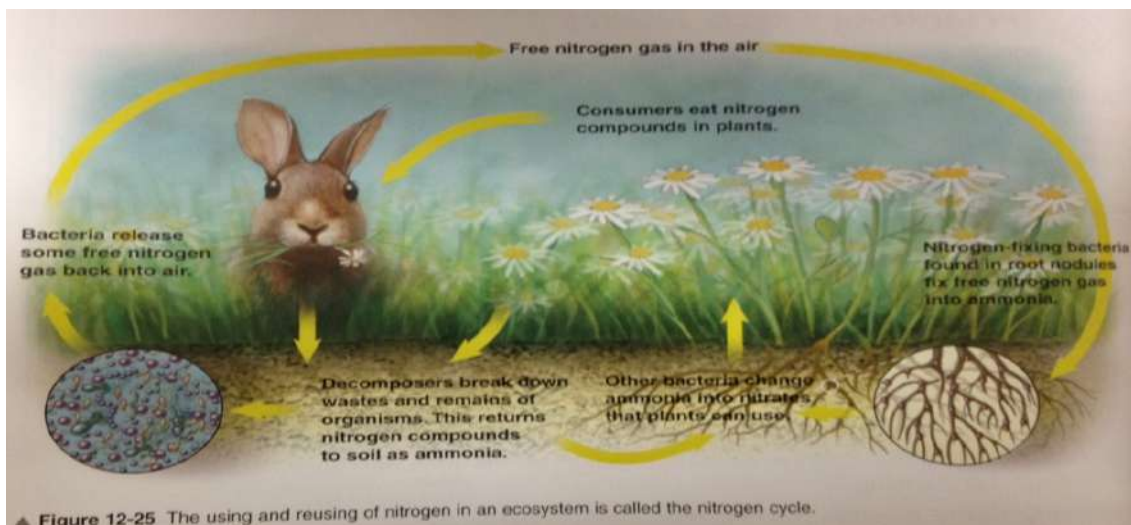
Nitrogen in the Air

Nitrogen is one of the elements that organisms need to make proteins. About 78% of the atmosphere is made up of nitrogen gas. However, most organisms cannot use the nitrogen found in air. It needs to be combined with other elements before most organisms can use it. The process of combining nitrogen with other elements in order to make usable compounds is called **nitrogen fixation**.

Most nitrogen is transformed into usable nitrogen compounds by nitrogen-fixing bacteria. Some nitrogen-fixing bacteria live in special swelling on the roots of legume plants. Legumes include beans, peas, and peanuts. The nitrogen-fixing bacteria change the nitrogen gas into a usable compound called ammonia. Other bacteria change ammonia into nitrates. These are two different processes. Lightning is another way nitrogen gas is transformed into nitrogen compounds.

The Nitrogen Cycle

Once the nitrogen gas has been transformed into nitrogen compounds, plants and animals can use it to build proteins and other complex substances. Plants get nitrogen from the soil. Animals get nitrogen by eating plants and by eating other animals that have eaten plants. Decomposers break down animal wastes and the remains of dead organisms into ammonia. This ammonia can be turned into nitrates again by other bacteria. This means the nitrogen cycle continues. The nitrogen cycle is the using and reusing of nitrogen in an ecosystem.



12-9 What is the nitrogen cycle?

Lesson Review

Write *true* if the statement is true. If the statement is false, change the underlined term to make the statement true.

- _____ 1. About 87% of the atmosphere is made up of nitrogen gas.
- _____ 2. The process of combining nitrogen with other elements in order to make usable compounds is called the nitrogen cycle.
- _____ 3. Most nitrogen is transformed into usable compounds by nitrogen-fixing bacteria.
- _____ 4. In the nitrogen cycle, nitrogen gas is changed into a usable compound called lightning.
- _____ 5. Plants and animals use nitrogen compounds to build proteins and other complex substances.
- _____ 6. Animals get nitrogen by eating decomposers.
- _____ 7. Bacteria break down the nitrates and release oxygen.
- _____ 8. The nitrogen cycle is the using and reusing of nitrogen in an ecosystem.

Skill Challenge

Skills: *interpreting, classifying*

Study the diagrams. Then, answer the questions that follow.

1. What cycle is shown in the diagram? _____

2. Why do plants and animals need nitrogen?

3. What organisms change nitrogen into a form that can be used by plants? _____

4. How do animals get the nitrogen they need to make proteins? _____

