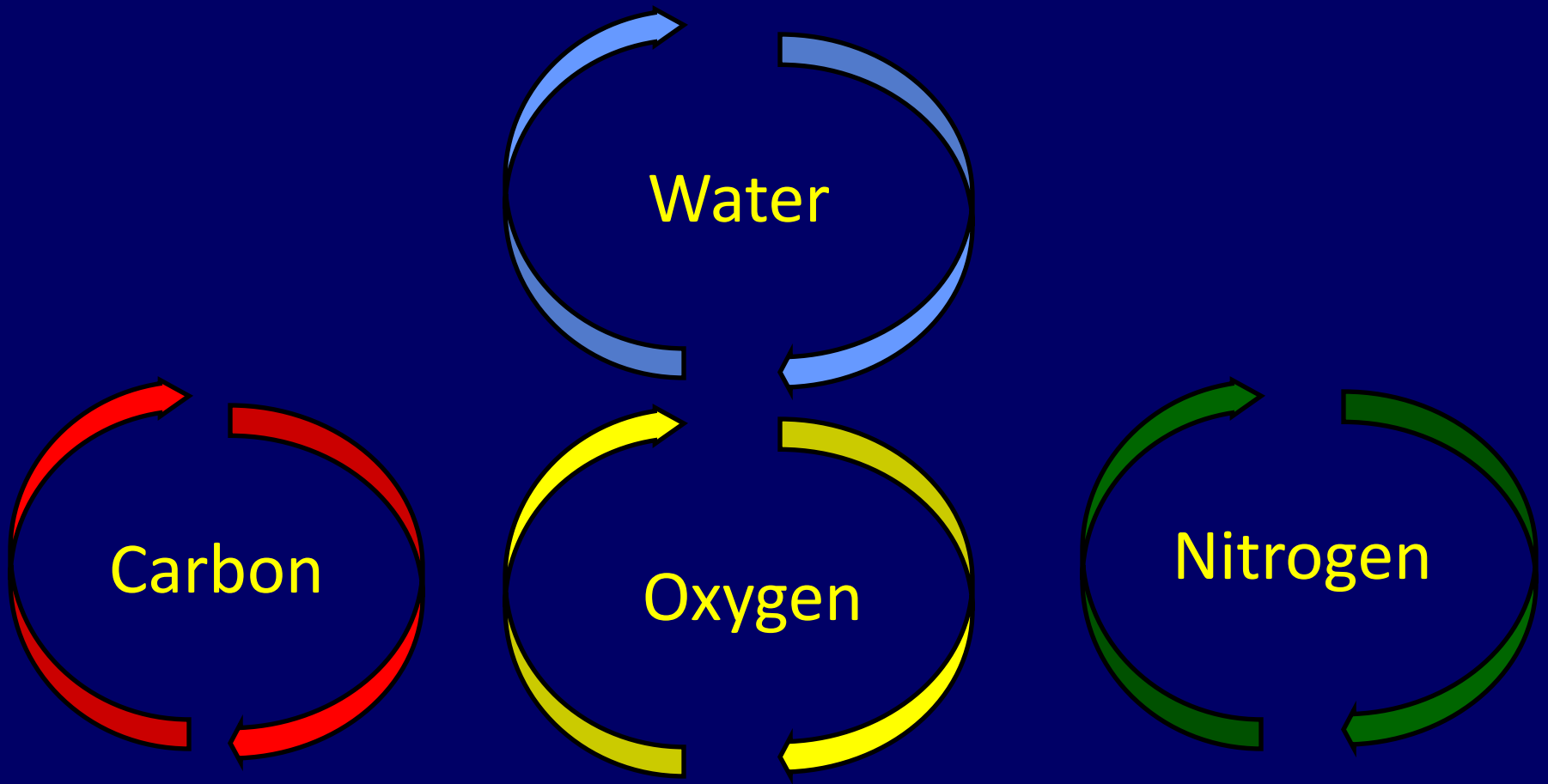
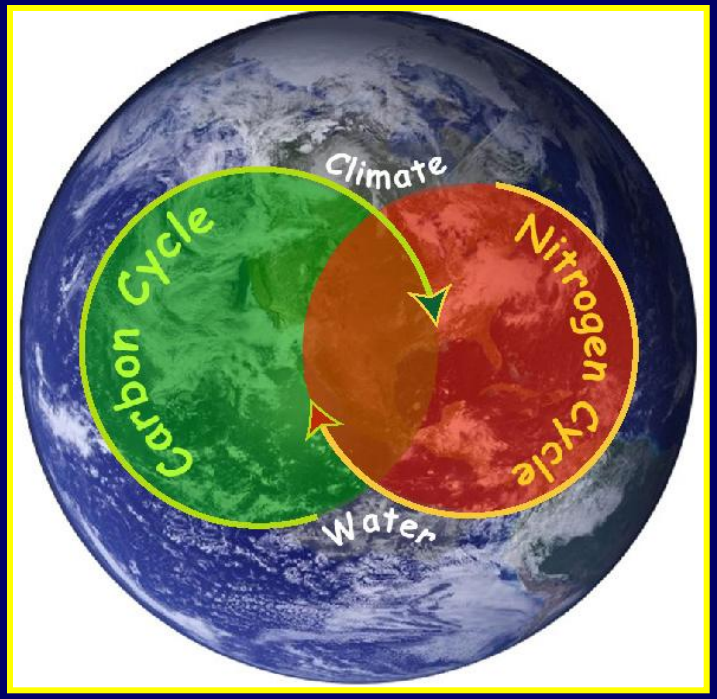
Carbon & Nitrogen Cycle

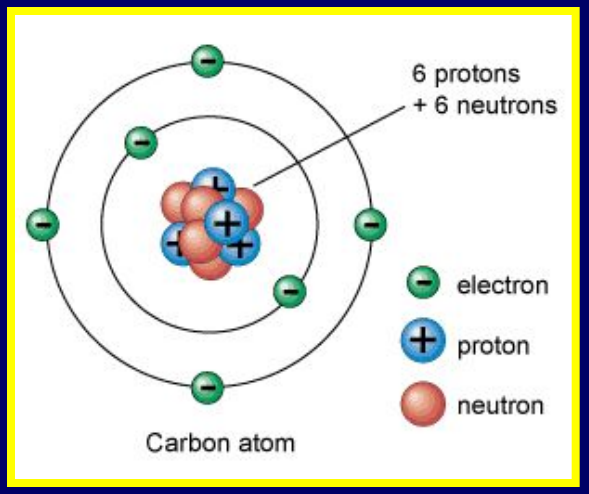
While energy flows through an ecosystem, water and minerals are recycled.



Water, carbon, oxygen, and nitrogen travel through a biogeochemical cycle, moving from the abiotic parts of an ecosystem into the biotic parts, and back again.

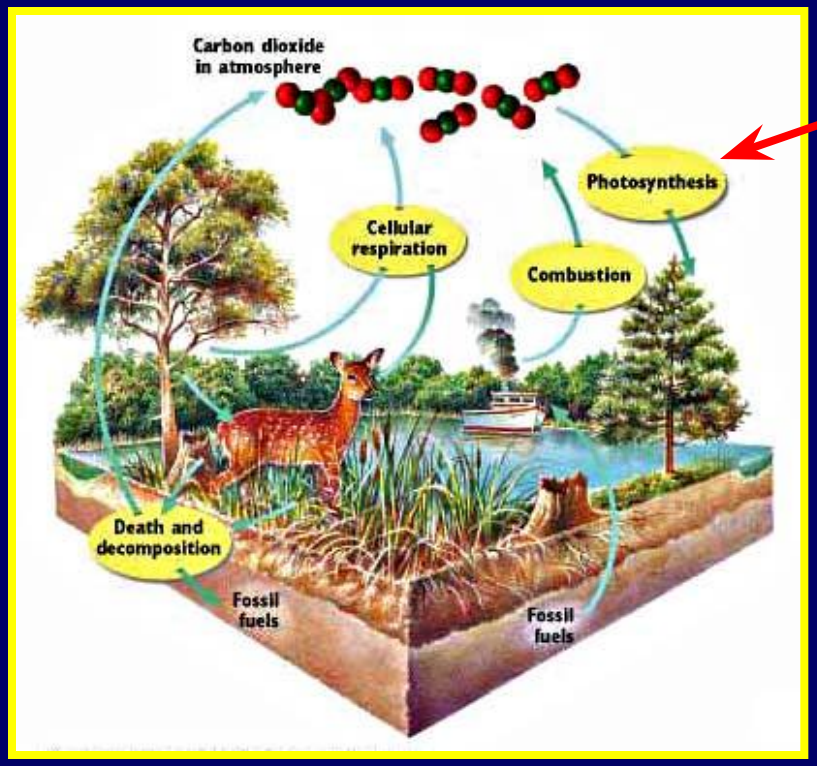


The Carbon Cycle



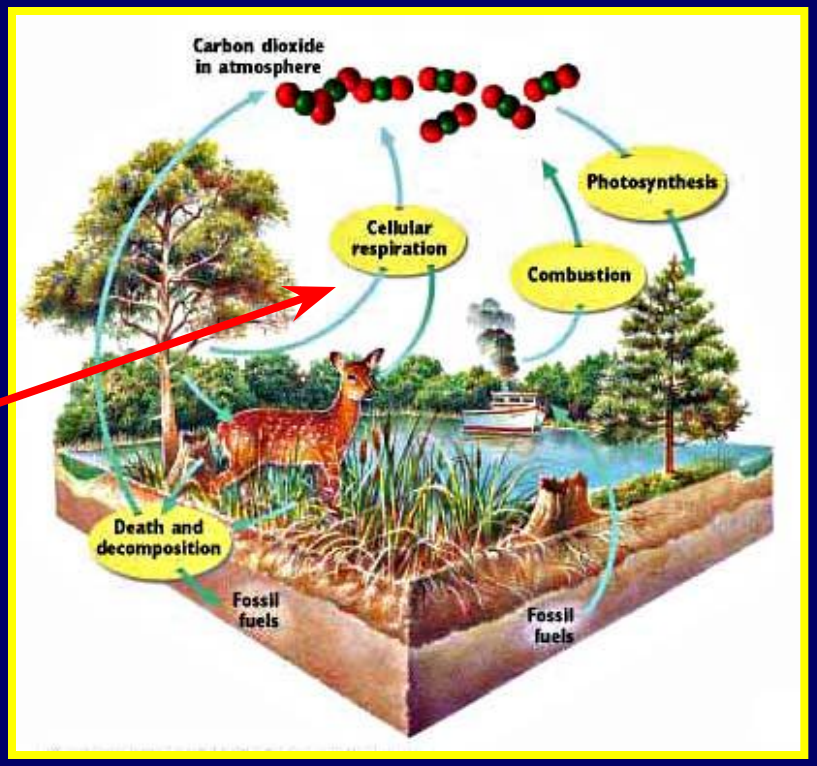
All living things are made up of organic molecules that contain carbon. Just like water, the amount of carbon on Earth has not changed since the formation of Earth, it has just been recycled.

The Carbon Cycle



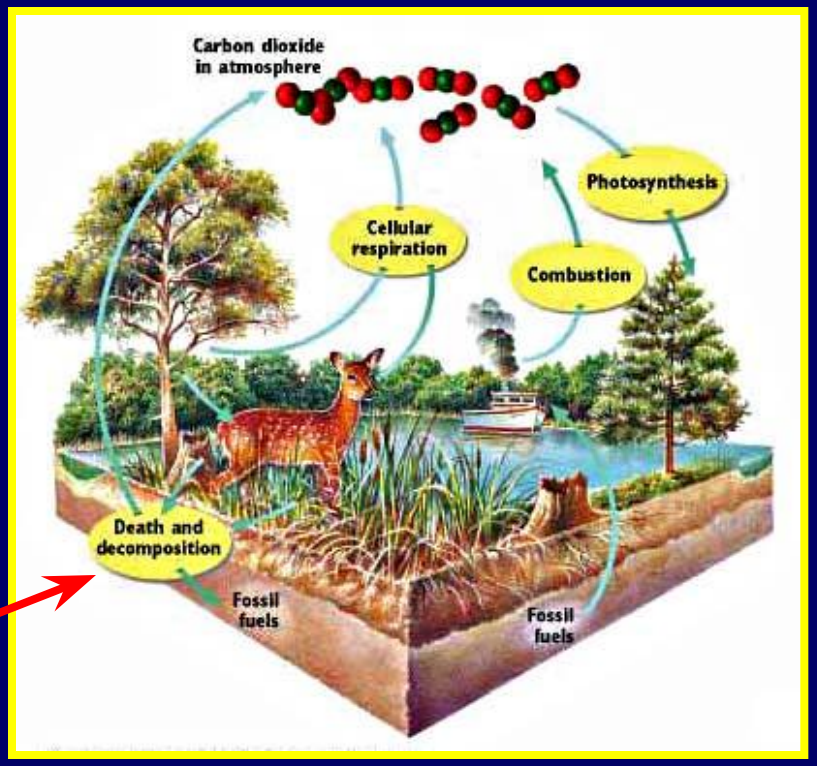
Plants remove carbon dioxide from the atmosphere, during photosynthesis, and convert it into simple carbohydrates.

The Carbon Cycle



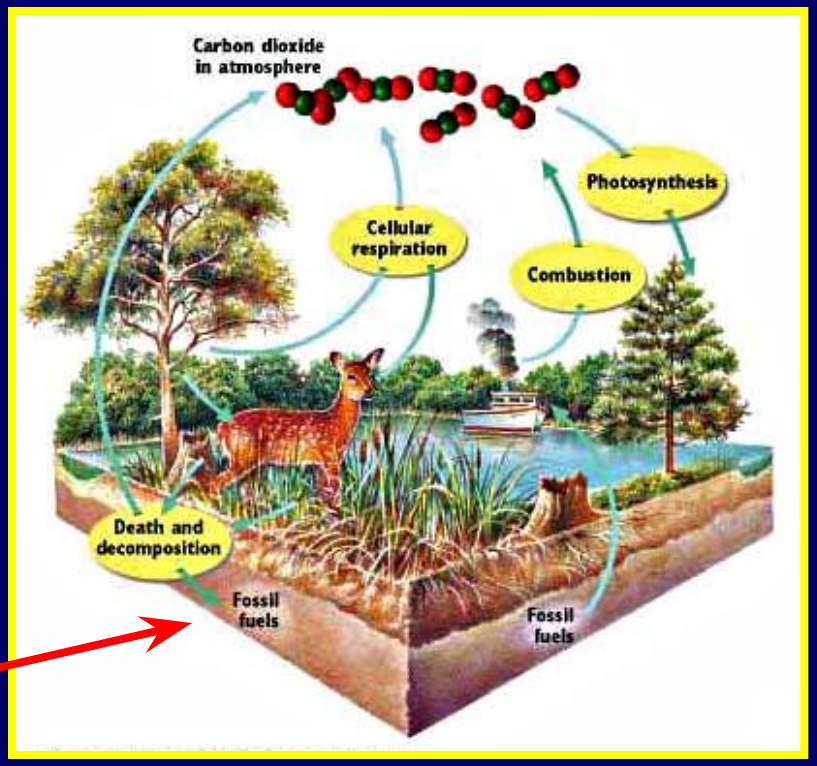
Consumers break down carbohydrates during cellular respiration and release carbon dioxide back into the atmosphere.

The Carbon Cycle



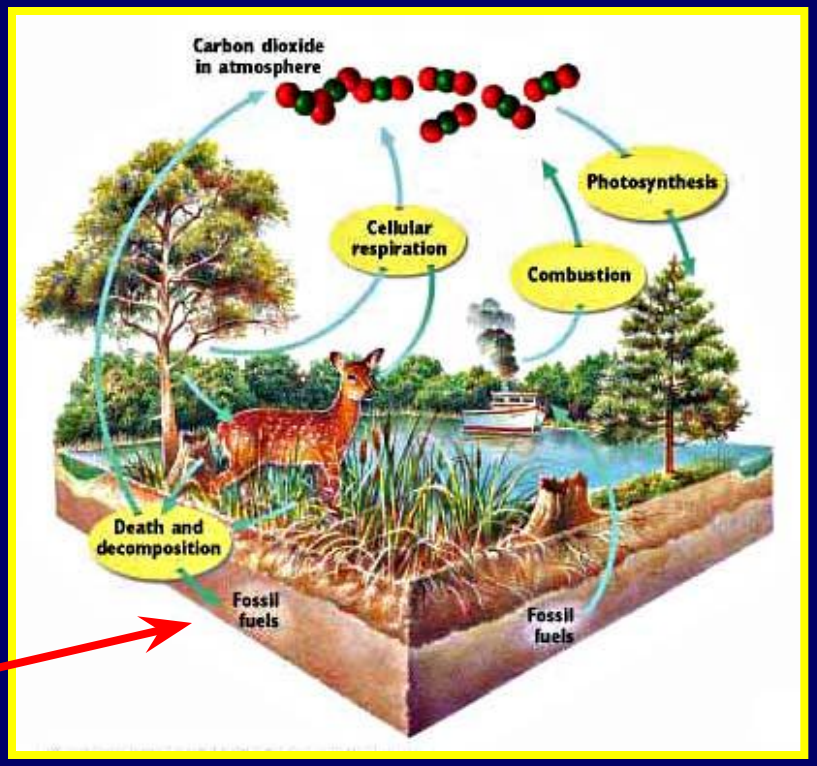
During <u>decomposition</u> of organic wastes, <u>carbon</u> dioxide is also released <u>into</u> the <u>atmosphere</u>.

The Carbon Cycle



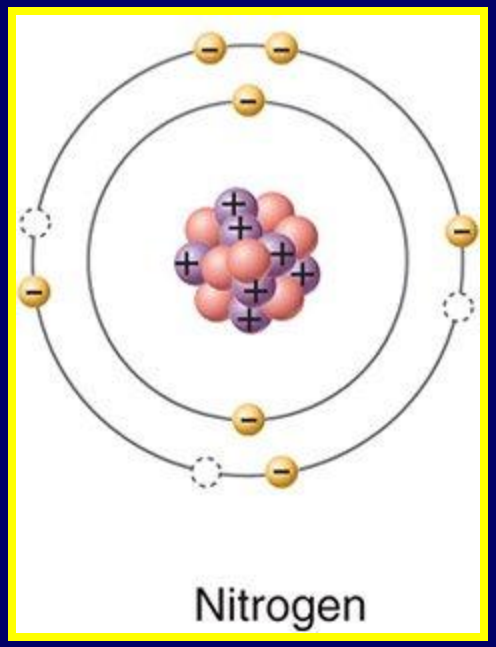
Organic <u>wastes</u> that are <u>not</u> <u>decomposed</u> are buried and converted into <u>fossil</u> <u>fuels</u>.

The Carbon Cycle



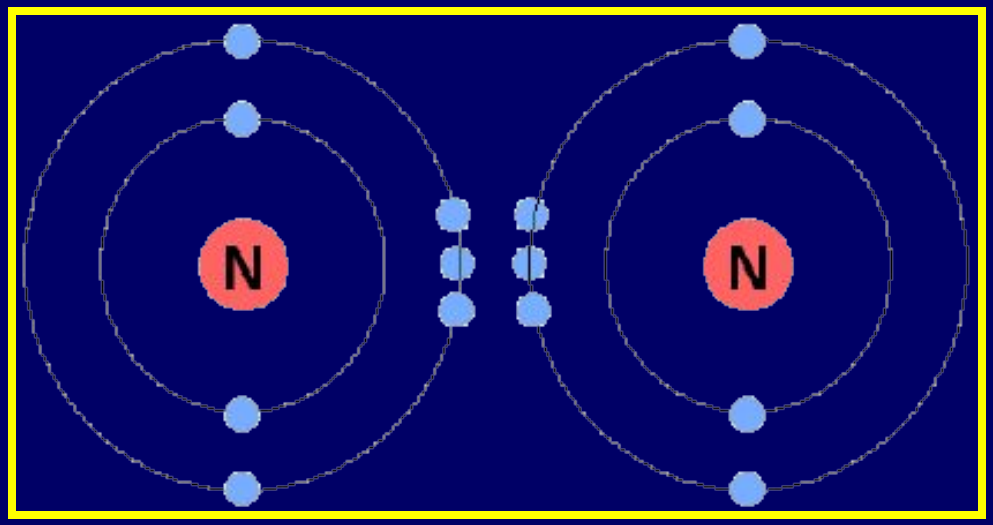
The burning of fossils fuels for mechanical use, during combustion, also releases carbon dioxide into the atmosphere.

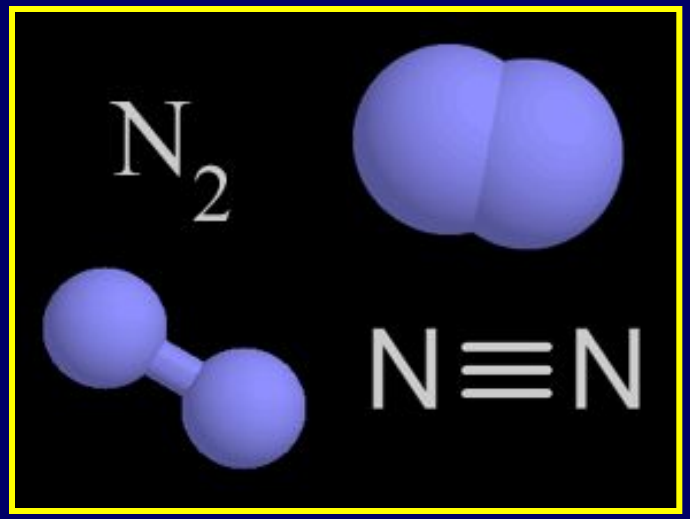
The Nitrogen Cycle



Nitrogen is an essential element for all life and used to form proteins and nucleic acids. Like water and carbon, nitrogen is also recycled through ecosystems.

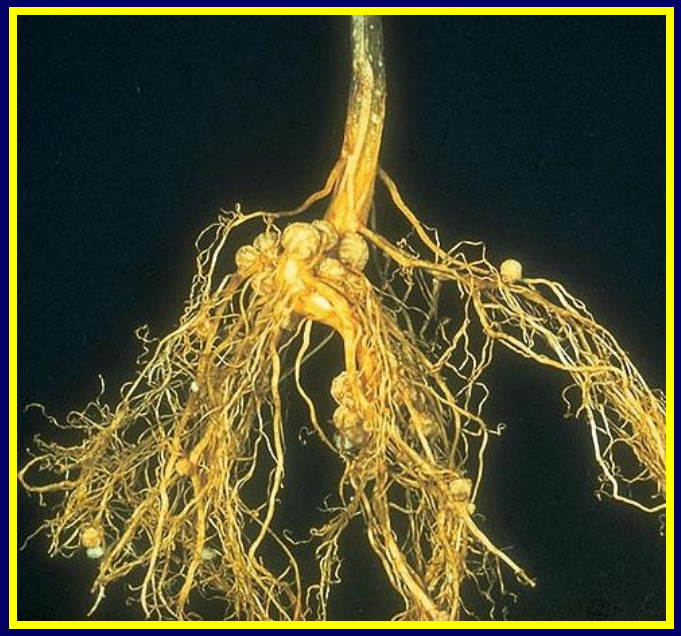
The Nitrogen Cycle

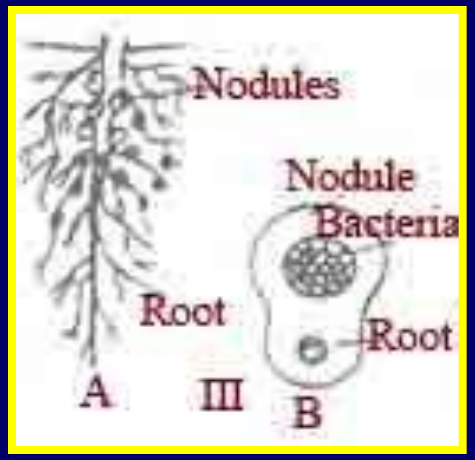




Nitrogen makes up 78% of the atmosphere. However, it exists as nitrogen gas, N_2, and is held together by a triple covalent bond that most organisms cannot break.

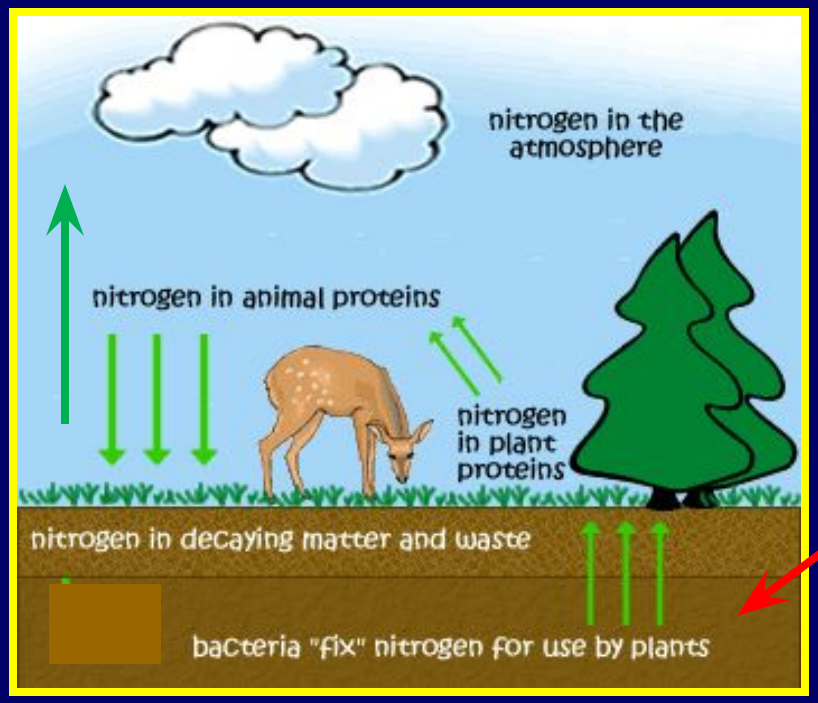
The Nitrogen Cycle





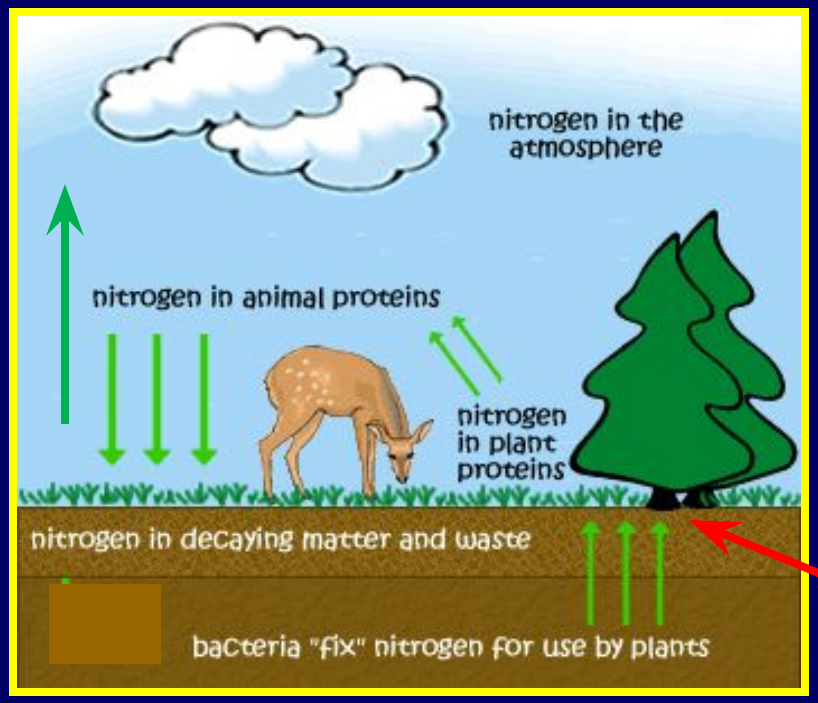
The only organisms that can break the covalent bonds in atmospheric nitrogen are symbiotic bacteria that live on the roots of legume plants (beans and peanuts).

The Nitrogen Cycle



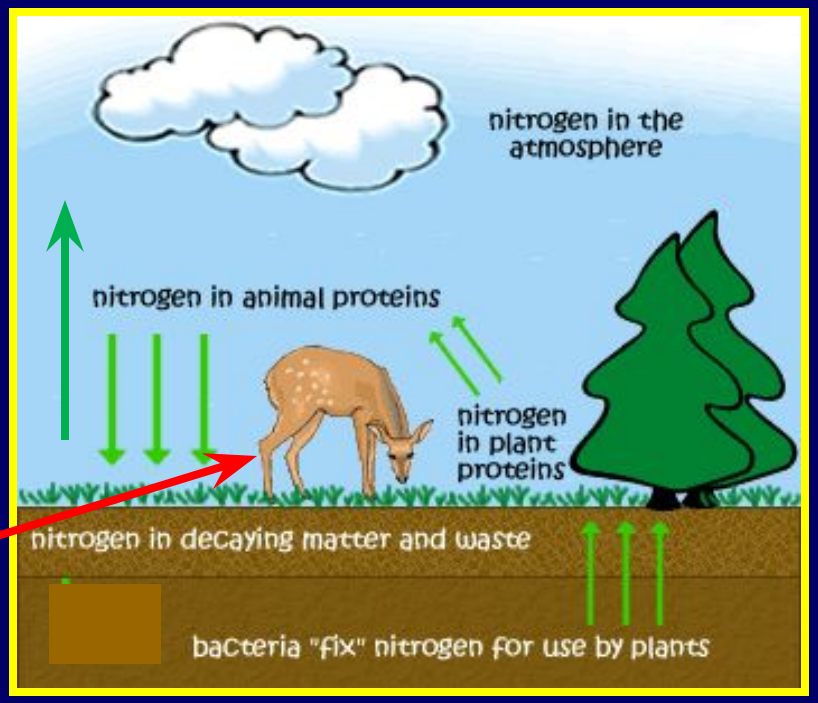
Nitrogen Fixing bacteria, on roots of legumes, fix nitrogen gas into ammonia, nitrate, and nitrite during nitrogen fixation.

The Nitrogen Cycle



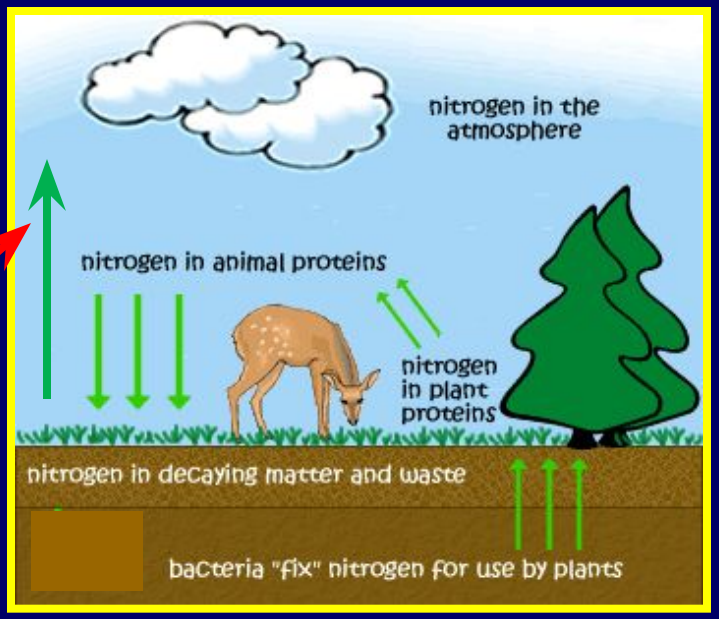
Plants then take up the nitrogen products and use it to form proteins and nucleic acids.

The Nitrogen Cycle



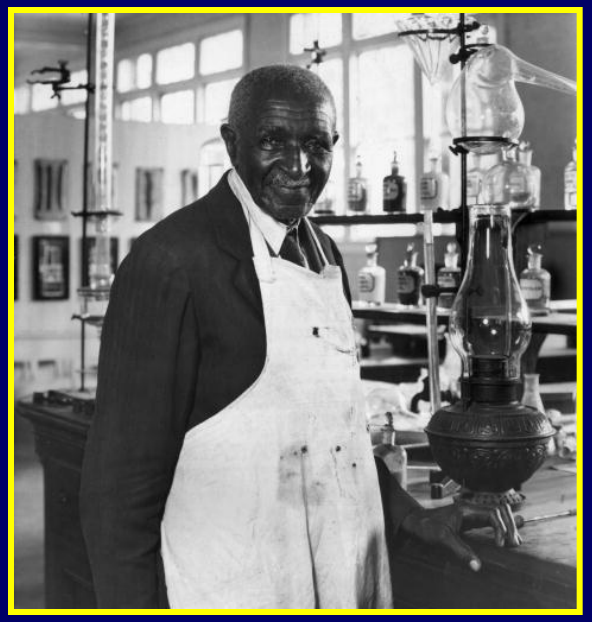
Animals obtain nitrogen by eating plants or other animals that ate plants. Excess nitrogen is released in urine or feces.

The Nitrogen Cycle



Anaerobic bacteria break down the nitrogen products in plant and animal wastes into nitrogen gas that is released into the atmosphere during denitrification.

George Washington Carver



http://intotheoutdoors.org/topics/discovery-of-nitrogen-fixation/

George Washington Carver was a botanist and teacher that prompted farmers to plant more legumes, especially peanuts, to enrich soils that had become nutrient poor after being used to grow cotton over and over again.
(He also invented Peanut Butter)

The End