

Nitrogen and Living Things – a complicated story.....



Gases in the air...



Air is a mixture of gases

Nitrogen	79%
Oxygen	20%
Carbon dioxide	0.03%
Others	tiny amounts



The air we breathe in enters the lungs where there is an exchange of gases. Some oxygen is removed and enters the bloodstream. An equal quantity of carbon dioxide from the bloodstream diffuses into the lungs and is breathed out.

The quantity of nitrogen in the air we breathe in and out does not change.



Nitrogen is a vital component of the protein structures that make up animals and plants. However, animals and plants are unable to use nitrogen gas directly from the air.



Animals get the nitrogen they need by eating plants and animals which are made of protein.

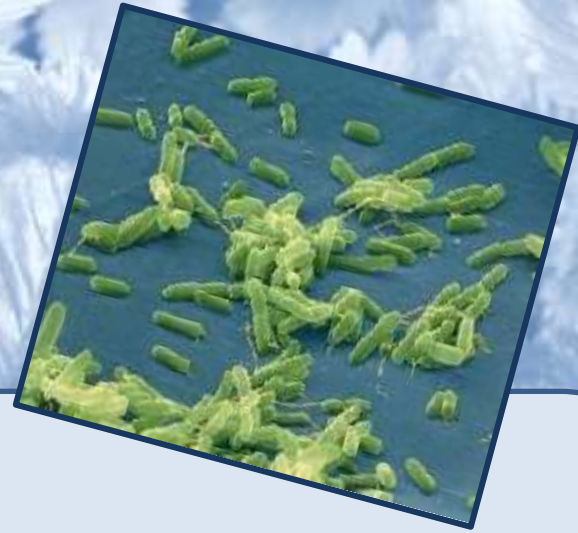
Plants take in nitrogen from their surroundings (to make protein) through their roots in the form of nitrogen compounds called nitrites and nitrates.

The high temperature of **lightning** causes some of the nitrogen and oxygen in the air to combine forming nitrogen compounds. These dissolve in rain and are washed into soil where they form compounds called nitrates.

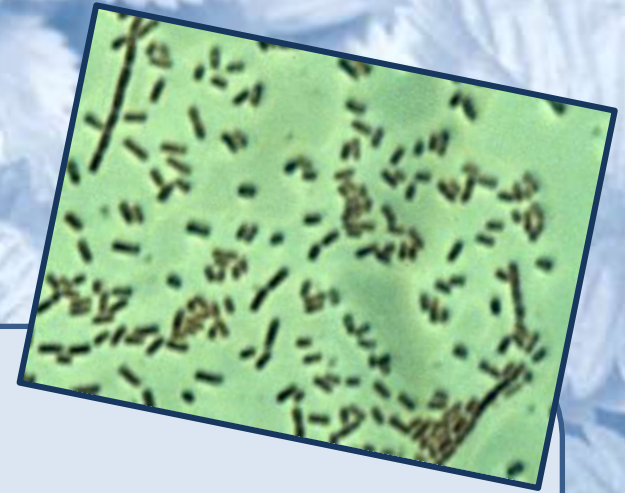




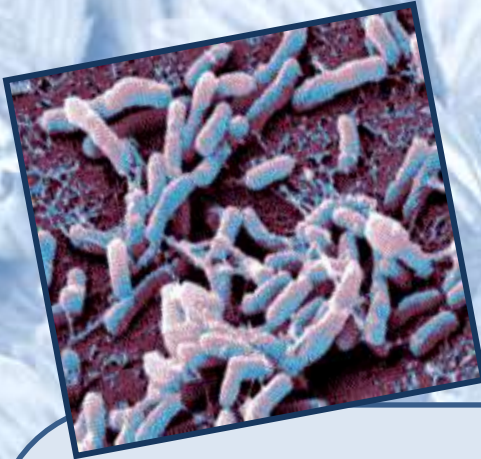
Decomposers (bacteria and fungi) break down animal waste and dead animal and plant proteins returning the nitrogen compounds they contain back into the soil.



The nitrogen (ammonium) compounds produced by the break down of animal waste and dead animals and plants are used by **nitrifying bacteria**, which live in soil, to produce nitrites and nitrates.



Denitrifying bacteria in soil break down nitrates to nitrogen gas which then escapes from the soil into the air.



Nitrogen fixing bacteria can absorb nitrogen as a gas and build it into nitrogen compounds. Some nitrogen fixing bacteria live freely in soil and some live in the root nodules of leguminous plants (eg peas, beans, clover).

The Nitrogen Cycle

