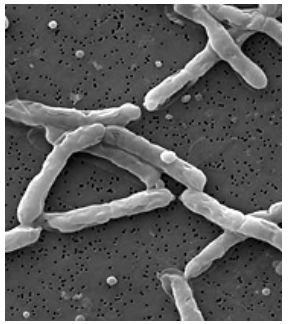
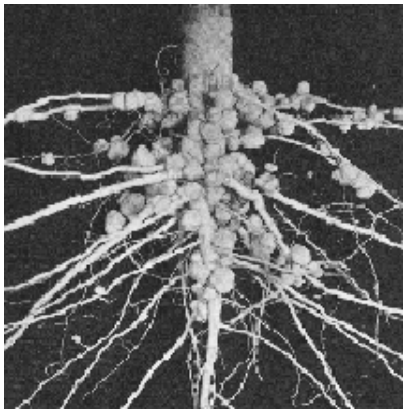
Nitrogen is found in the atmosphere. It can get "fixed" (changed into a form usable by organisms) by lightning. There is only one other way to get nitrogen out of the atmosphere.

A special type of bacteria called nitrogen fixing bacteria take in atmospheric nitrogen (N_2) and produce ammonia (NH_3). Then other bacteria take over and convert this ammonia into nitrates and nitrites, which are nitrogen and oxygen containing compounds. (NO_2, NO_3, etc)



←Nitrogen fixing bacteria

The nitrates and nitrites are sucked up through plant roots.

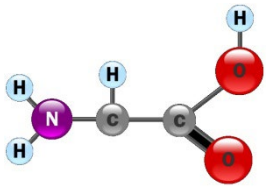


Nitrogen fixing bacteria nodules on soybean roots

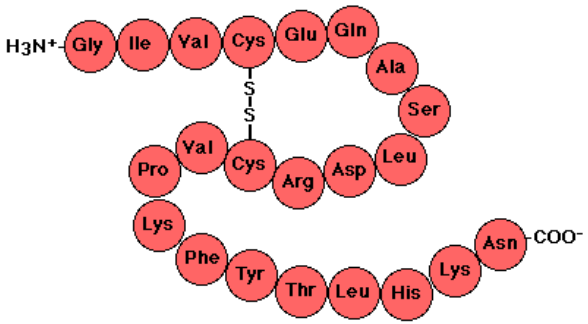
The nitrates and nitrites are used by plants to make amino acids which are then used to make plant proteins.

How?

- Gets some glucose which has plenty of carbons, hydrogens, and oxygen
- Break it apart and rebuild the atoms in just the right shape
- Put a Nitrogen atom in just the right place



Plants are then consumed by other organisms which use the plant amino acids to make their own proteins (long chains of amino acids). Proteins are the main building blocks of cells.



Plants and organisms die with lots of nitrogen in their tissues. Decomposers convert the nitrogen found in these organisms into ammonia and return it to the soil. A few types of bacteria return nitrogen to the atmosphere by a process called denitrification, however this amount is small. Other bacteria might simply start the process over again by making nitrites and nitrates.