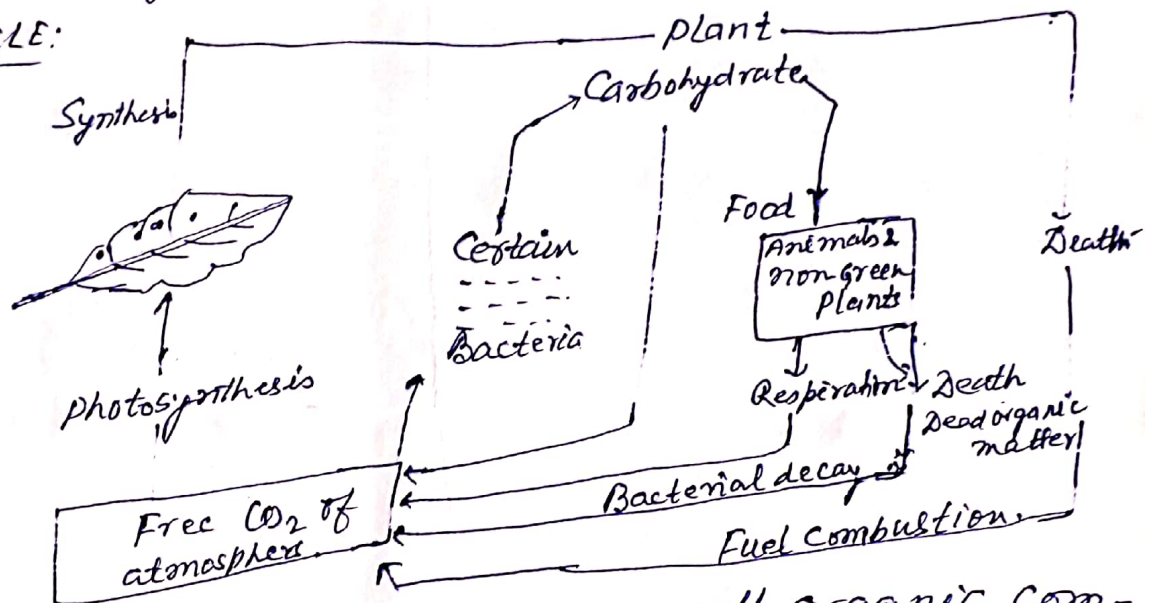


Bio-geochemical cycle may be defined as circulation of chemical elements and minerals including all essential elements of protoplasm from environment to organism and back to the environment in cyclic manner.

There are two types of bio-geochemical cycle:-

- (i) Gaseous cycle:- Carbon, Nitrogen, Oxygen cycle.
- (ii) Sedimentary or Mineral cycle: Sulphur, phosphorus cycles.

CARBON cycle:



Carbon is a basic element of all organic compounds in the living community. Carbon moves from environmental in term of  $CO_2$  into producer in the process of photosynthesis. From it into consumer community, then to decomposer from both the trophic levels and finally returns to the environment.

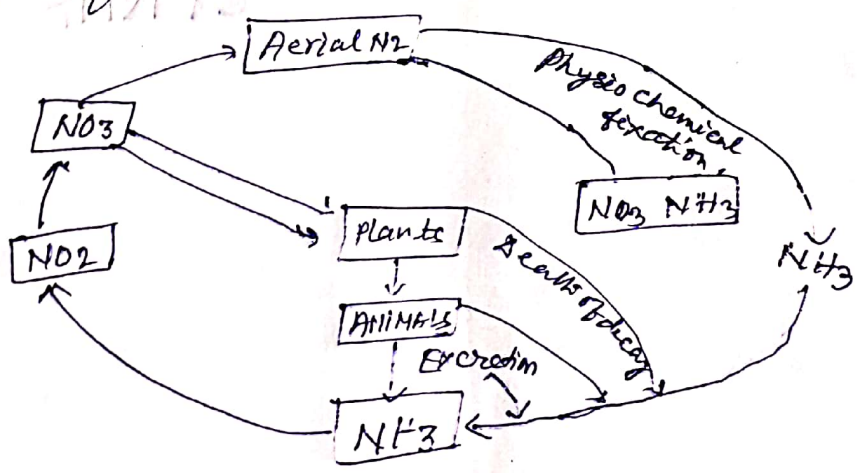
The percentage of  $CO_2$  in the air is very small ranging from 0.03 to 0.04%.

Nitrogen cycle ( $N_2$  cycle): Circulation of nitrogen atoms, brought about mainly by living organisms.

Inorganic nitrogenous compounds (chiefly nitrates) are absorbed by autotrophic plants from soil or water and synthesized into organic compounds. The autotrophs die and decay or are eaten by animals and the nitrogen, still in the form of organic compounds (e.g. proteins, nucleic acids) returns to the soil or water via excretion or death and decay. Ammonifying and nitrifying bacteria then convert them to organic compounds. Some nitrogen is lost to the atmosphere as nitrogen gas by denitrification. A great deal is extracted from the atmosphere by N-fixing bacteria and blue green algae. Lightening causes oxygen and nitrogen to react, producing oxides of nitrogen which react with water to form nitrate ions, adding nitrogen to the soil.

Nitrogen is an essential element in the living substances, like proteins, nucleic acids and other nitrogenous bases and present 79% in free state in atmosphere but plants and animals cannot use gaseous nitrogen. Animals use it as amino acid and plants in the form of soluble nitrogen salts. Thus gaseous nitrogen is converted into useful form in following steps: —

- (i) Nitrogen fixation and (ii) Nitrification.



Thus we see that bio-geo. chemical cycle plays a vital role in maintaining the mass of different elements. Carbon, Nitrogen, Hydrogen, Oxygen, Phosphorus, Sulphur through a proper cycle of producer, consumer, decomposer and again to producer.