

N NUTRIENT CYCLE

(a) Nitrogen cycle.

The cycle describes how nitrogen and nitrogen-containing compounds are changed into different forms in nature.

The nitrogen cycle consists of three major processes:

- (i) nitrogen fixation
- (ii) nitrification
- (iii) Denitrification

(a) Nitrogen fixation - The process of converting inert nitrogen gas into more useable nitrogen compounds.

- It can be achieved by

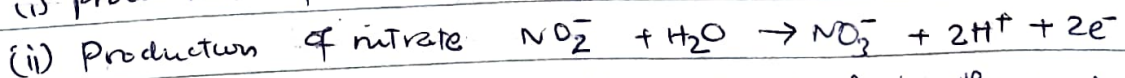
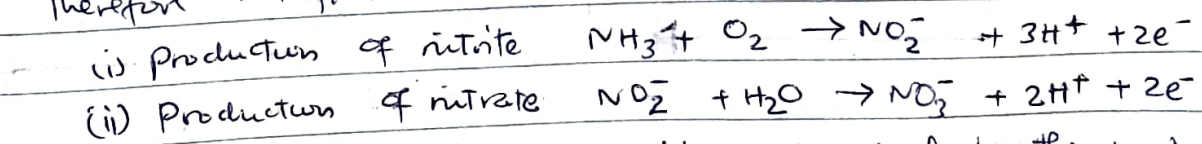
(i) nitrogen-fixing bacteria which are free-living in the soil or live in root nodules of leguminous plants such as soy, peas and beans. Bacteria get carbon dioxide from the plants and in exchange produce ammonia which can be used by plants.

(ii) Lightning - The high temperature of lightning discharge causes some of the nitrogen and oxygen in the air to combine and form oxides of nitrogen. These dissolve in the rain and are washed into the soil as weak acids, where they form nitrates.

(b) Nitrification - The conversion of ammonia into nitrite and then into nitrates, which can be absorbed and used by plants.

- Nitrification is carried out by bacteria in the soil called NITRIFYING BACTERIA.

Therefore nitrification involves two reactions



Nitrates so produced are easily absorbed by the roots of plants. The absorption of nitrates by plants is called assimilation.

- Once the nitrates have been assimilated by the plants they become part of the plants' proteins. These

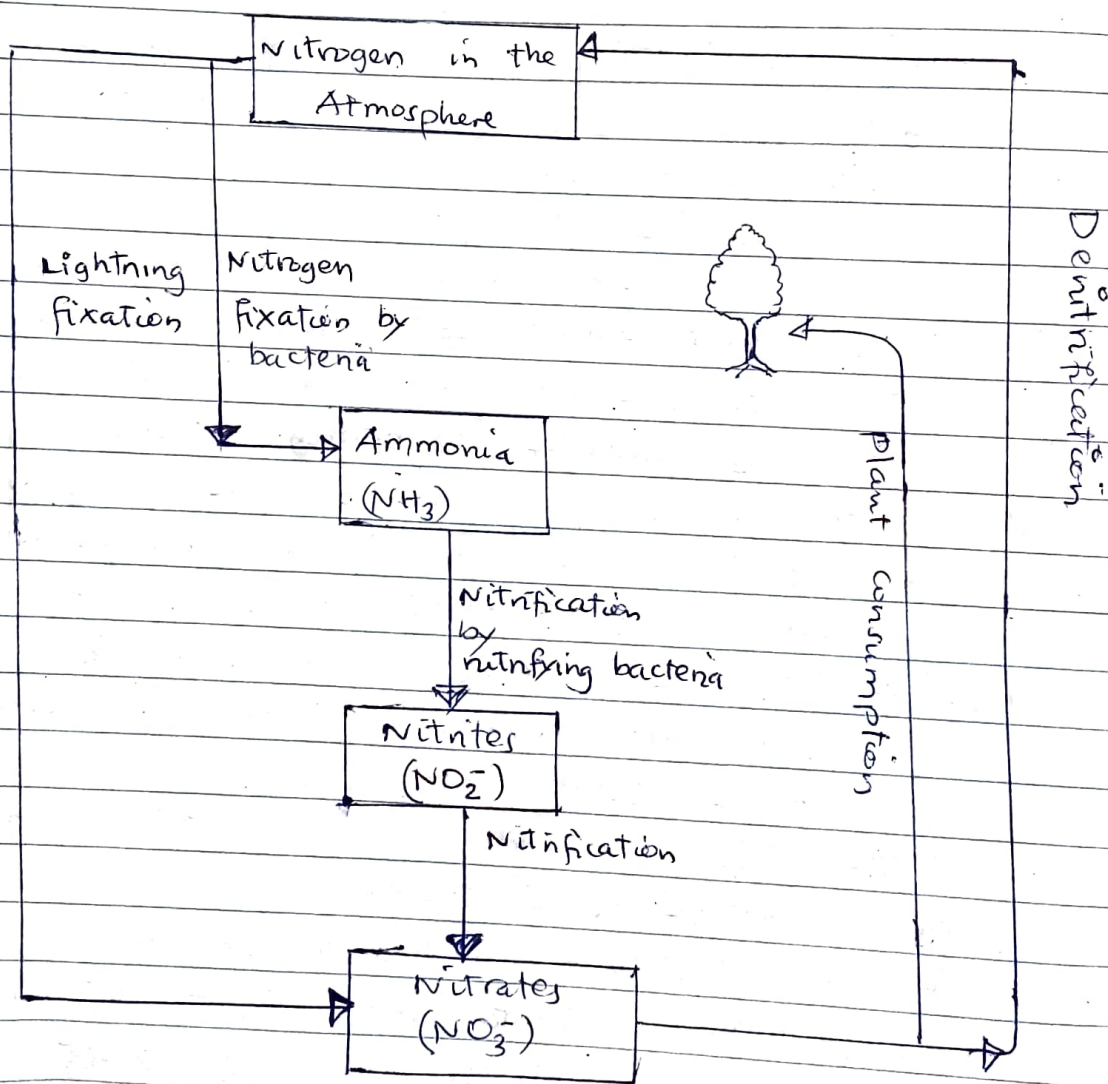
plant proteins are then available to be eaten by animals.

(c) Denitrification - The conversion of nitrates and nitrites back into nitrogen gas in the atmosphere.

The process is carried out by denitrification bacteria.

The nitrogen that is produced is returned to the atmosphere to complete the nitrogen cycle.

DIAGRAM OF NITROGEN CYCLE.



* Nitrogen fixation - The process of converting inert nitrogen gas into more useable nitrogen compounds.

* Nitrification - The conversion of ammonia into nitrites and then into nitrates, which can be absorbed and used by plants.

* Denitrification - The conversion of nitrates back into nitrogen gas in the atmosphere.