Unit II Biodiversity

plant system:-

- The plant system biology encompasses the studies on plant in response to biological, genetic or chemical perturbations which Includes Supervison of gene, protein and biochemical path Way.

Two system in plant

- The shoot system
- The root system

- The shoot system includes the above ground Vegetative portions (stems & leaves) and reproductive Portions (flowers & fruits).

- The root system Supports the plant and is usually under ground.

Basic Concepts of Plant growth

The plant growth Could be defined as the increasing of plant Volume and/or

Mass with or without formation of new structures such as organs, tissues, cells or cells organelles.

Nutrition - photosynthesis:

- During photosynthesis, water and Carbondioxide are used in the Presence of Sunlight to produce Carbohydrates and oxygen.
- photosynthesis provides food to all living beings.
- Oxygen, one of the main Components of life on earth is released by plants during photosynthesis.
- plant use simple chemical substances like Carbon dioxide, water and minerals for the synthesis of food.
- Chlorophyll, water, Carbondioxide and Sunlight are the essential requirements for photosynthesis

Nitrogen fixation :

- Nitrogen fixation is a process that implies the transformation of the relatively Non reactive atmospheric N_2 into its more reactive Compounds (nitrates, nitrites, or ammonia)
- Such reactive forms are Suitable for Crops and Support their growth.

The steps involved in the fixations :

Nitrification :

- It is a process of Conversion of ammonia into nitrates.

Assimilation : In this ammonia and nitrates are utilized by the plants

Ammonification :

By this process, nitrogen Present in the living matter is Converted into Ammonia.

Animal system :-

- Nitrogen fixed by bacteria is utilized by plants to synthesize important biomolecule which are in turn utilized by Animals to derive their nitrogen requirements from plants.

- The nitrogen fixation is carried out Naturally in soil by microorganisms termed diazotrophs that include bacteria, such as Azotobacter, and archaea.

- Role of Nitrogen-fixing bacteria is to supply plants with the vital nutrient that they cannot obtain from the air themselves.

Biological Nitrogen Fixation

Agricultural Systems

Crop

Plant Associated

- legume - rhizobia
- Azolla - cyanobacteria
- Cereal - associative bacteria
- Cereal - endophytic bacteria

Free living

- Cyano bacteria
- heterotrophic bacteria
- autotrophic bacteria

pastures & Fodder

- legume - rhizobia
- cereal - associative bacteria
- Cereal - endophytic bacteria

Free living

- Cyanobacteria
- heterotrophic bacteria
- autotrophic bacteria

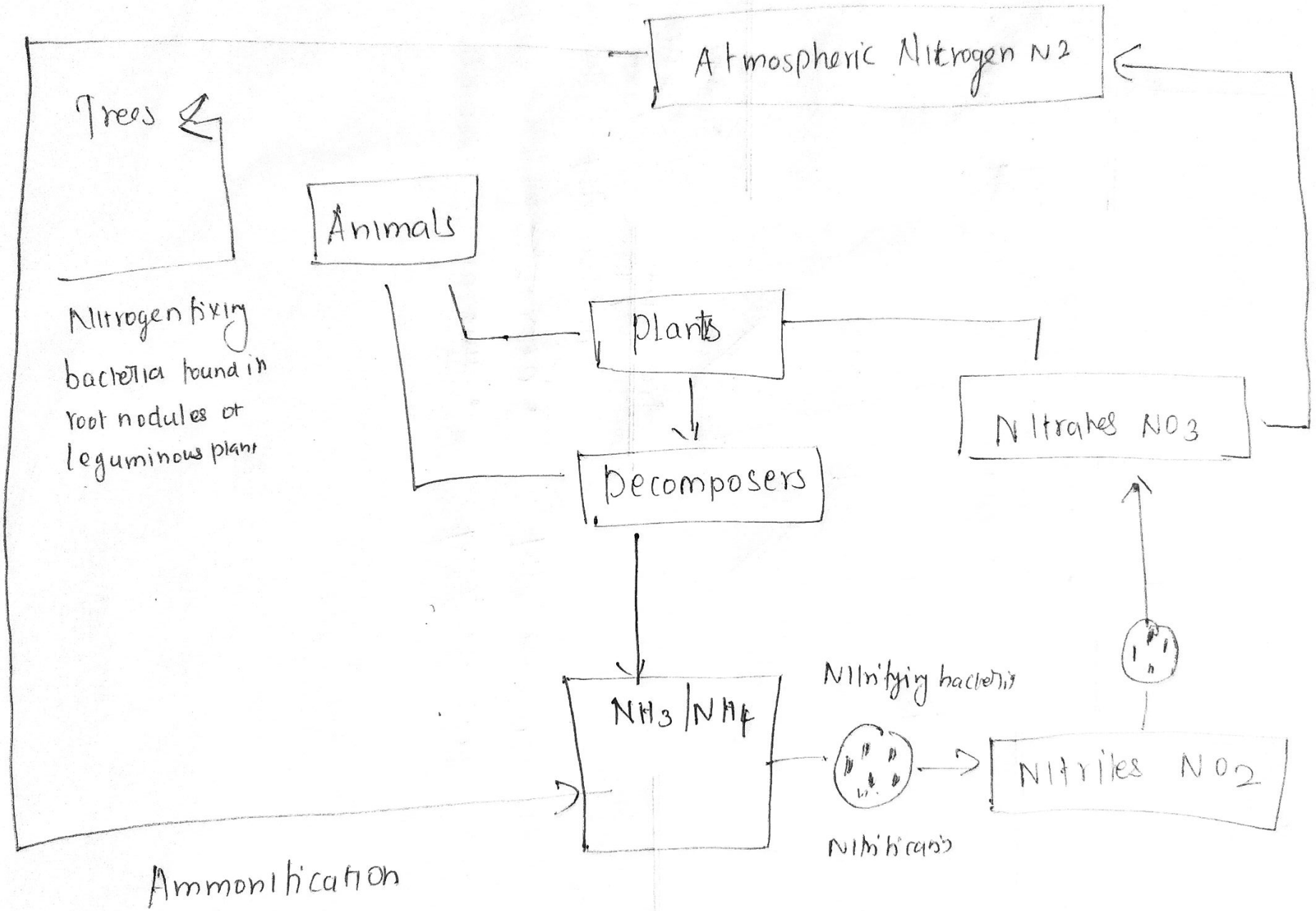
Natural system

plant Associated

- Azolla
- cycad
- no legume
  - cereal Associative bacteria
  - cereal endophytic bacteria

Free living

- Cyano
- cyanobacteria
- heterotrophic
- autotrophic bacteria


Atmospheric Nitrogen N2
Trees
Animals
Nitrogen fixing bacteria found in root nodules of leguminous plant
Plants
Decomposers
Nitrates NO3
NH3 / NH4
Nitrifying bacteria
Nitrites NO2
Nitrifying bacteria
Ammonification

Elementry Study of digestive respiratory Circulatory - Excreotory System

• Digestive system absorbs klaler and nutrients from the food you eat.

• Circulatory system Carries oxygen, klaler and nutrients to Cell throughout body.

• Wastes from the cells are eliminated by respiratory system

5 digestive System

(1) Mouth

(2) esophagus

(3) Stomach

(4) Small intestine

(5) large intestine and ~~anus~~ anus.

4 Excretory system

(1) Kindneys

(2) Ureters

(3) Urinery bladder

(4) Urethra

It removes the waste product of Cellular metabolism, maintains salt-water balance

7 types of digestion :-

Ingestion
Propulsion
Mechanical digestion
Chemical digestion
Absorption
Defecation

The functions of the excretory system

- Non solid waste are eliminated through the lungs, skin
- Lungs exhale Carbondioxide and waste vapo
- The sweat glands in the skin release excess water and salts

- Remove excess onwanted materials from the body fluids of a Person or organism
- Elemination of Wastes from the body through the urethra through the bladder.
- Bladder also Controls the flow of urine throughout the body.

Mirobial system: history types of microbes economic importance and Control of microbes

. It is a study of microorganisms, or microbes a diverse group of generally minute Simple life forms that include bacteria, archea, algae, fungi, protozoa, and Viruyes.

. The field Covers with structure function and classification of Such organism and with ways of both exploiting and Controlling their activities.

- The 17th Century discovery of living forms existing invisible to the naked eye was a significant milestone in the history of Science.

- 13th century onward it had been postulated that invisible entities were responsible for decay and disease.

Types of microbes:

- Bacteria
- Fungi
- Viruses
- Archaea
- Protozoa
- Algae
- protists
- staphylococcus epidermidis
- Staphylococcus aureus
- Hay bacillus
- High GC gram +
- Rickettsia