Lesson 1: Plant survival

Plant needs are :

1- Water

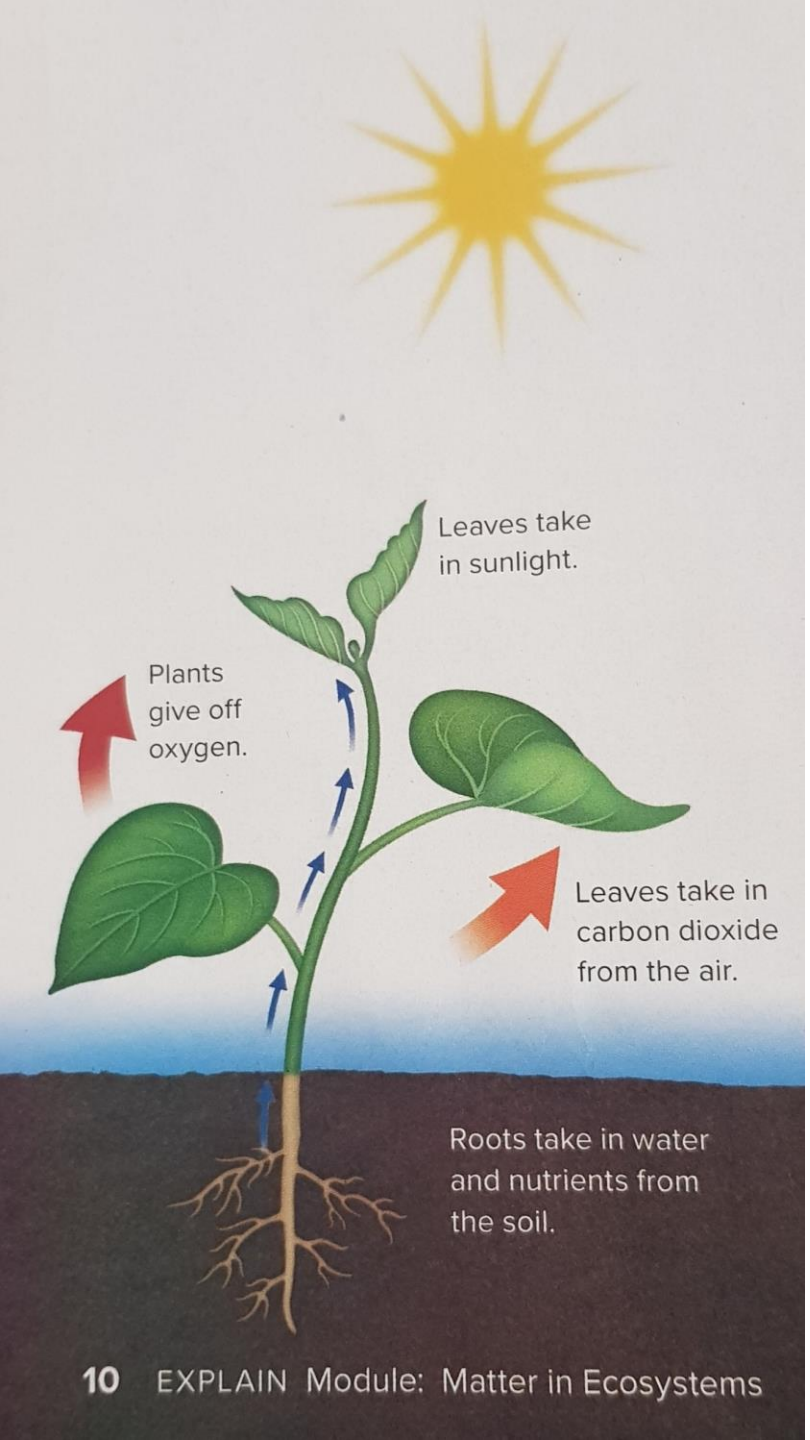
2- Air : Carbon dioxide (co2)

3- Sunlight

4- Space

5- Nutrients : are substances that a living thing needs to stay healthy.

Plants need energy to meet these needs and energy is the ability to perform work or change something.



Plants use structures such as leaves, stem and root.

1- Leaves : take in sunlight and carbon dioxide through stomata and produce sugar.
Leaves take in carbon dioxide
Take out oxygen.

Stomata : is tiny opining in the bottom of the leave open to allow carbon dioxide to enter and close to keep water inside.

2- Stem: carries water and nutrients through the plant.

3- Roots: take in water and nutrients from the soil.

Important picture (will come in exam)

So: the plants take in water and carbon dioxide in the presence of sunlight to produce sugar and oxygen. Can be presented in this equation:

Water + carbon dioxide $\xrightarrow{\text{sunlight}}$ sugar + Oxygen

Inside the stem of the plant there are xylem tissues and phloem tissues.

Xylem	Phloem	Transpiration
Carries water and nutrients from roots up the plant.	Carries sugar form the leaves up and down the plant.	Is the evaporation of water from the plant's leaves. As water evaporate from the leaves, more water is carried from the bottom of the plant to the top replacing the water that has evaporated.

Lesson 2: Ecosystems

- Ecosystems can be small or very large.

Habitat	Niche
Where an organisms lives.	The special role (job) an organism plays in the ecosystem.

Ex: earthworms: دودة الارض
Habitat: Forests
Niche: Break down plant matter in the soil.

Invasive species:

- An organism that is introduced to a new ecosystem and causes harm to that area.

- They spread quickly.
- Harm the environment and human health.
- Get new diseases.

Lesson 3: Decomposers.

- **What are decomposers?**

➢ Decomposers are a group of organisms that break down the matter from dead plants and animals.

➢ The process of breaking down matter from dead organisms into simpler substances is called Decomposition.

- **Where they found?**

➢ Decomposers are living thing found in all ecosystems on Earth.

- **Examples on decomposers:**

1. **Bacteria**: made of a single cell and decompose waste and dead matter
2. **Earthworms (دود الارض)**
3. **Fungi**: like mold (عفن) – yeast (خميرة)- mushrooms.

- **Decomposers niche (Job):**

1. Remove and recycle materials from dead organisms.
2. Add nutrients to the soil for plant growth

- **What is the main difference between Fungi and plants?**

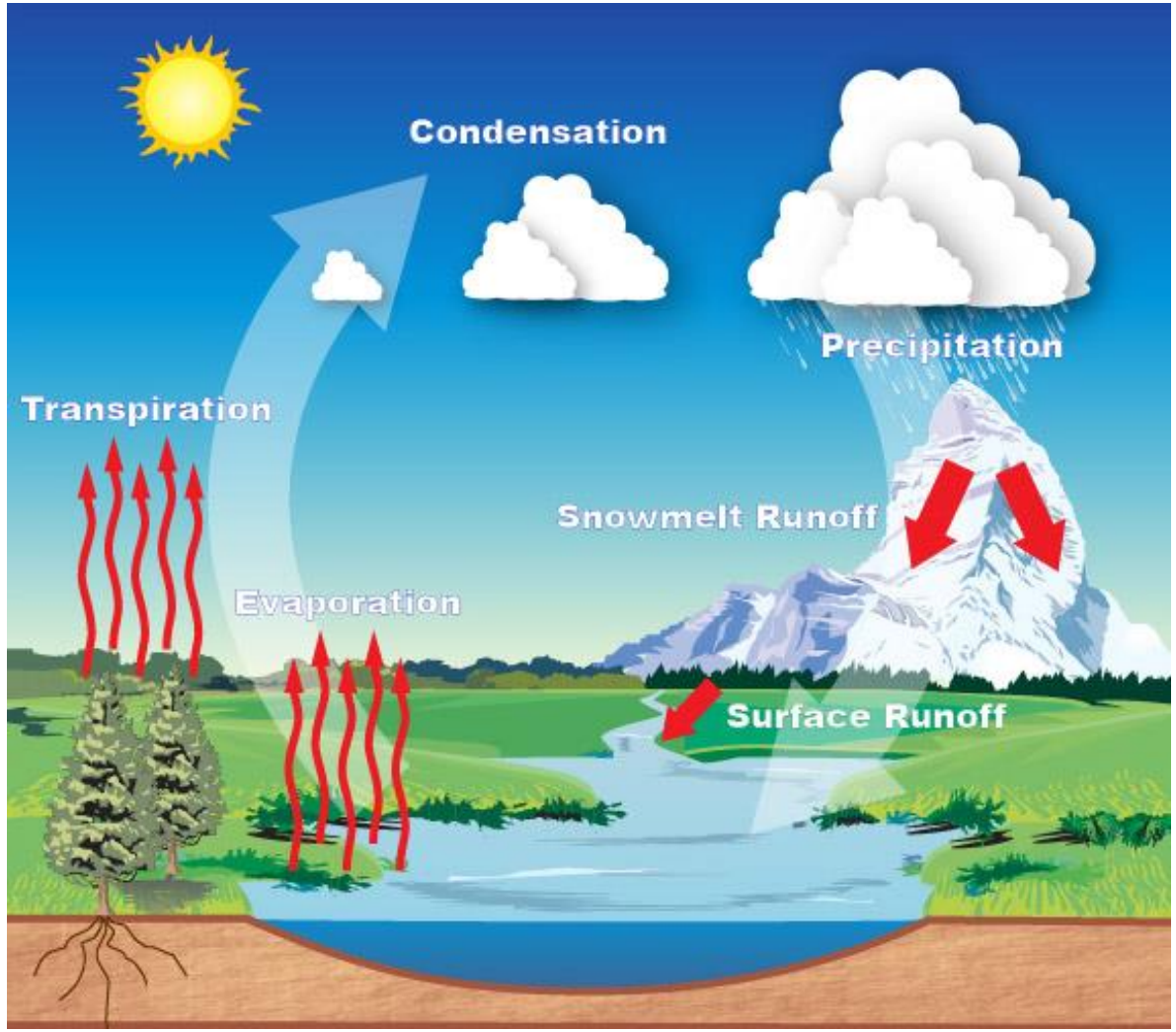
➢ Fungi cannot produce their own food, but plants do.

Lesson 4: Earth’s system

- Earth’s system are four:

- Atmosphere: gasses (Air) surrounding earth.
- Geosphere: Solid and Molten rocks, soil, mountains, volcanoes.
- Hydrosphere: liquid and solid water.
- Biosphere: all living things.

Lesson 5: Water cycle (between earth's surface and air)



- Water cycle is the continuous movement of water between earth's surface and the air.

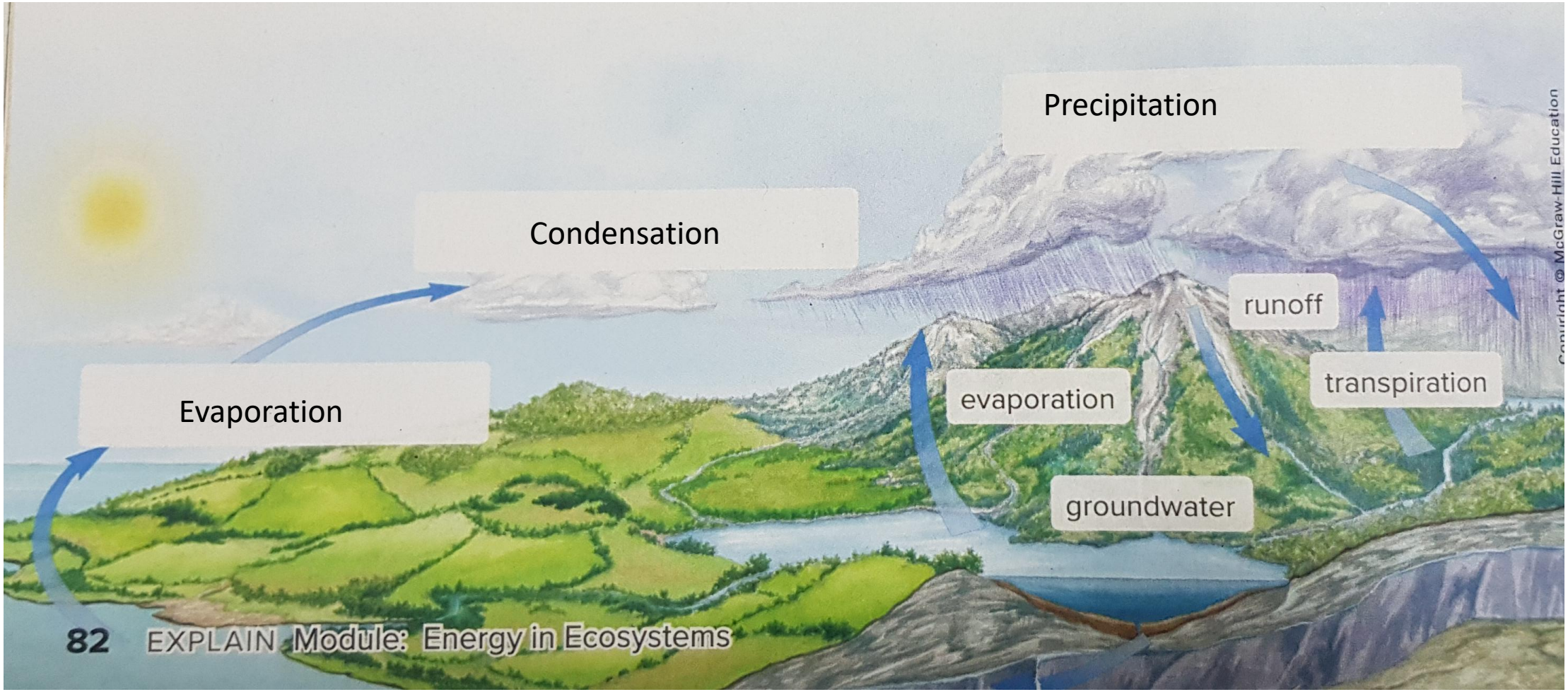
- 1- Evaporation: from liquid to gas.
- Transpiration: water evaporating from the leaves.

- 2- Condensation: from gas to liquid forming clouds.

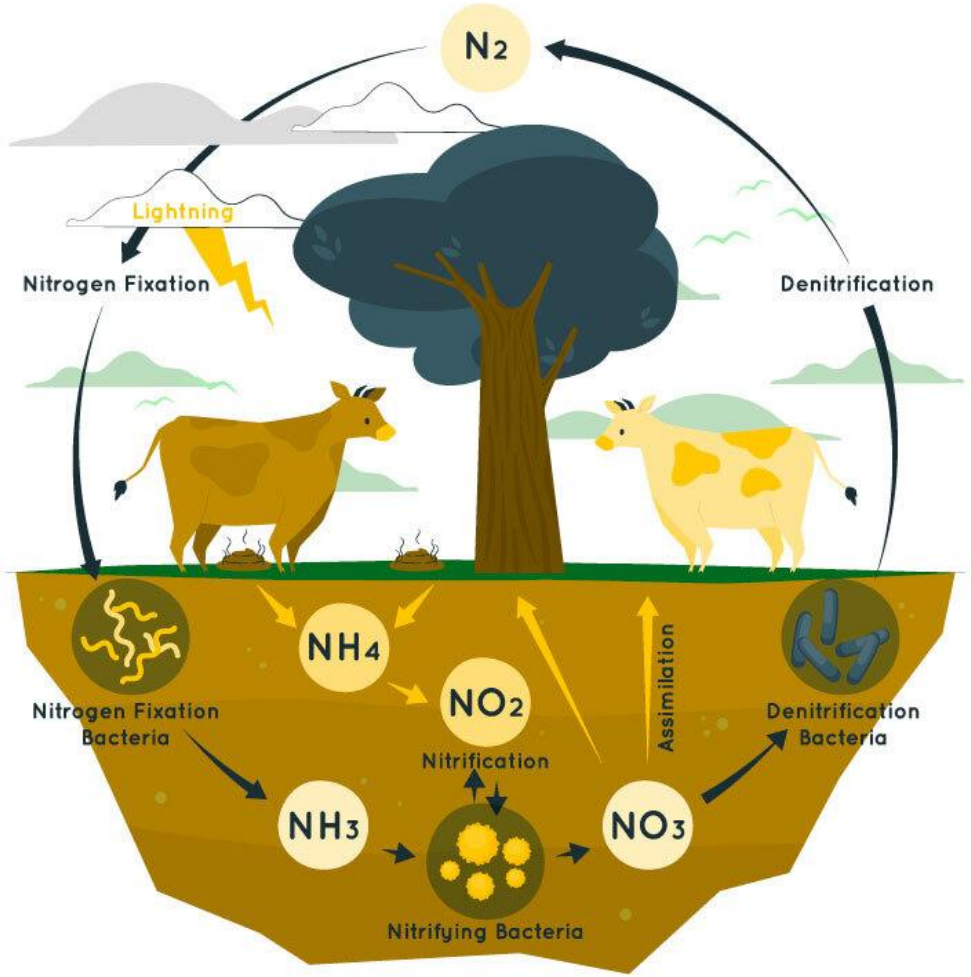
- 3- Precipitation: rain, hail, sleet, snow.

- 4- Runoff: water flows on earth's surface.

Important picture (will come in exam)



Nitrogen cycle: (between air, soil and living things)



Nitrogen cycle is the continuous circulation of nitrogen from air to soil to organisms and back to air or soil.

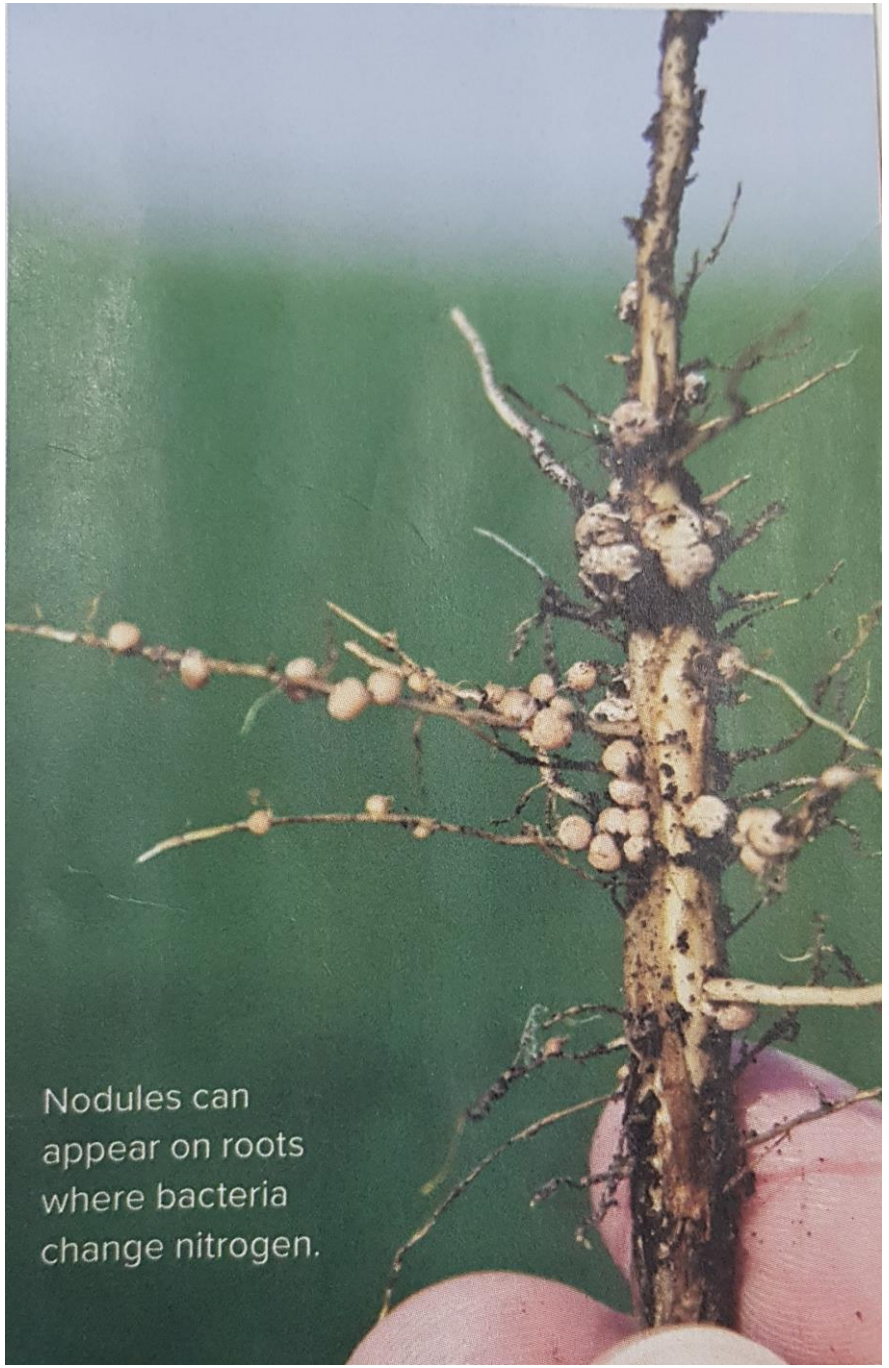
1- Nitrogen fixed into the soil by volcanic activity and lightning.

2- Some bacteria that live on roots of plants absorb nitrogen to make proteins.

3- When animals eat plants they take in the stored nitrogen.

4- Nitrogen is released into the soil through animals waste.

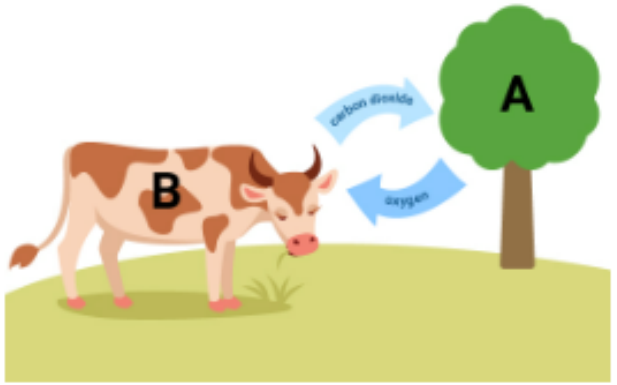
5- Decomposers and bacteria help return nitrogen into the atmosphere and the cycle repeats.



★ Important picture (will come in exam).
nodules can appear on roots where bacteria change nitrogen in nitrogen cycle.

Oxygen – Carbon cycle (between living things and environment)

- Producers (plants) give off (release) oxygen.
- Consumers release carbon dioxide.
- So as producers, plants take in carbon dioxide and give off oxygen, animals take in oxygen and give off carbon dioxide.



A producers
B consumers

Which words would best represent A and B?