

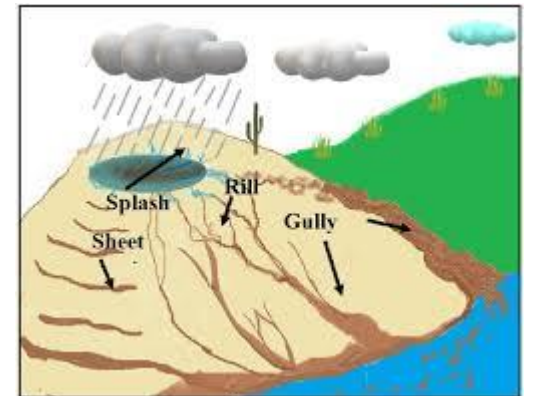


1

BY TEACHER DAVIS SULPHITE

SENIOR TWO TERM 1  
2025

AUTHOR EXCEL BOOKS  
KISSEM BIOLOGY DEPARTMENT



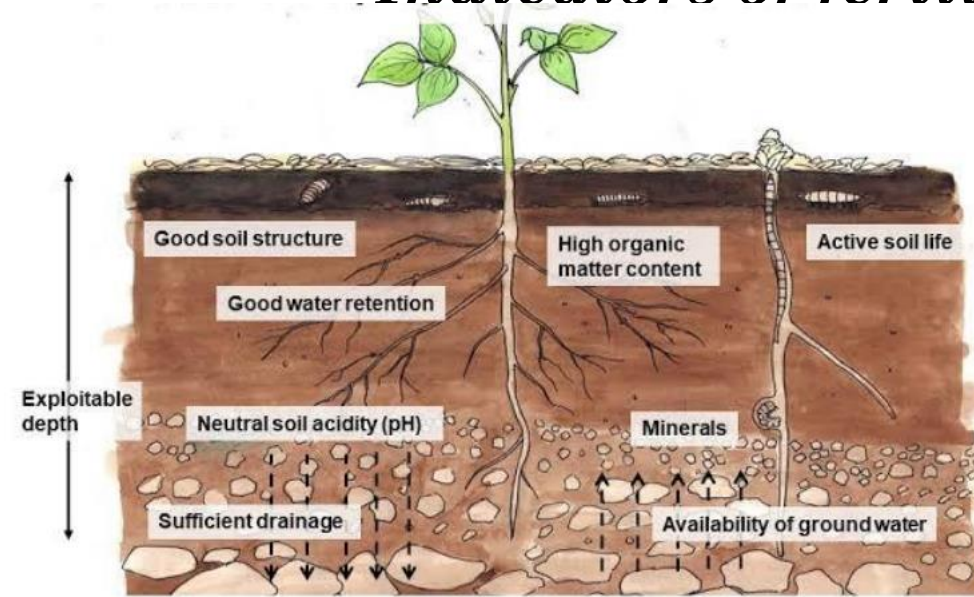
WHAT  
DO YOU  
THINK IS  
FERTILE  
SOIL



# FERTILE SOIL

do you think soil fertility is important?

*Indicators of fertile soil*



# SOIL EROSION

- What is soil erosion?

## *Causes of soil erosion*

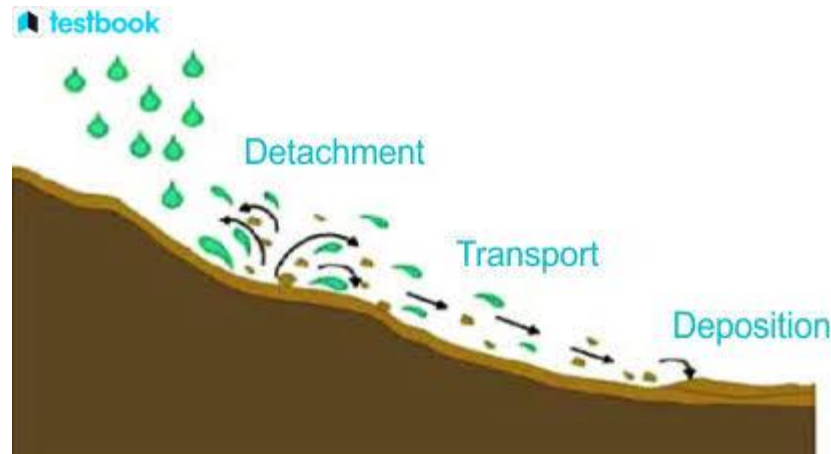
- Explain how each of the following contributes to the process of soil erosion

### WHAT ARE THE LEADING CAUSES OF EROSION?

- 1 WATER
- 2 WIND
- 3 DEFORESTATION
- 4 POOR SOIL MANAGEMENT
- 5 AGRICULTURAL ACTIVITIES
- 6 CONSTRUCTION AND MINING
- 7 INDUSTRIAL ACTIVITIES
- 8 CLIMATE CHANGE

# PROCESS OF SOIL EROSION

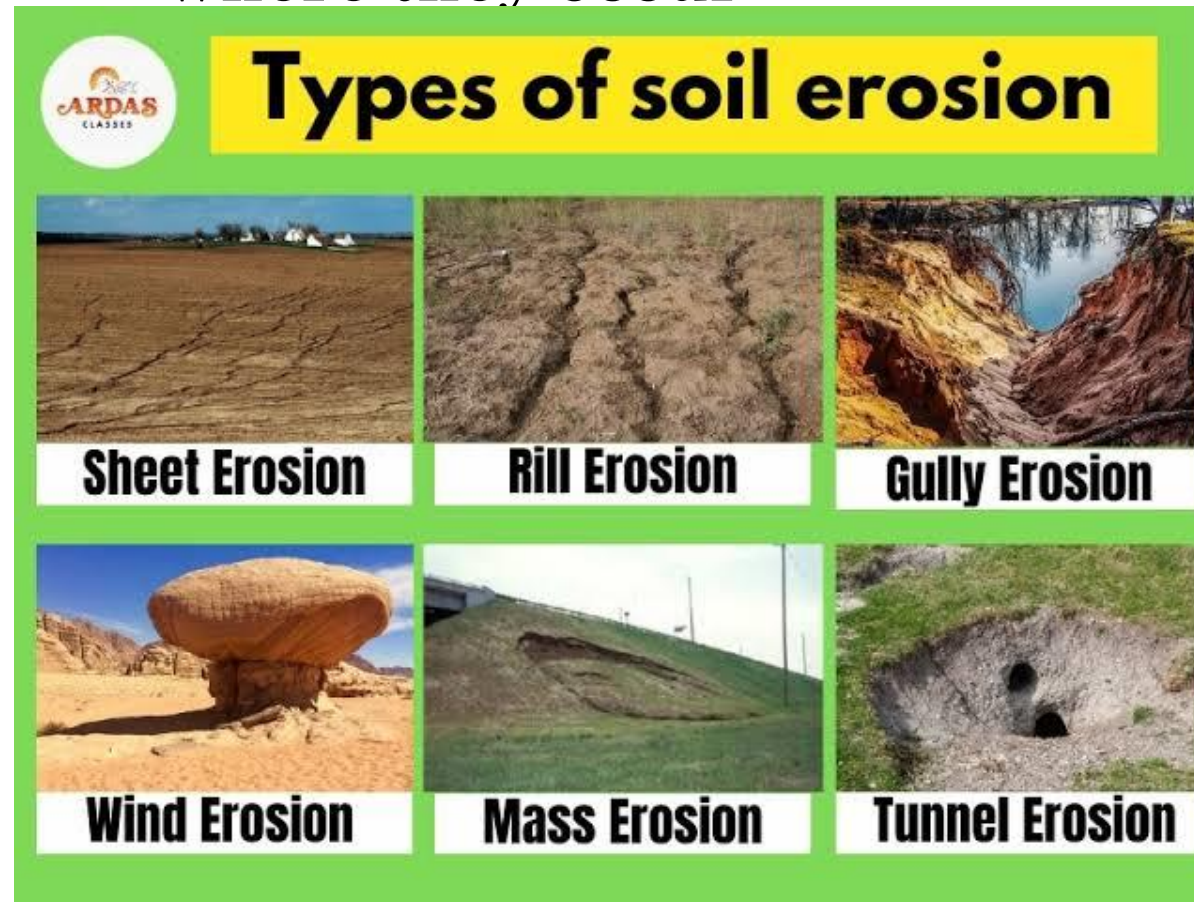
- Involve two major stages
- **Detachment** :breaking of the soil particles by agents of soil erosion
- **Transportation**: the detached particles are then moved by the agents of erosion
- They are the deposited in a given area





# TYPES OF SOIL EROSION

- Define the following types of soil erosion and state the areas where they occur



## Problems caused by soil erosion:

1. Loss of valuable topsoil.
2. Burying valuable topsoil.
3. Damage to fields.
4. Plant productivity decline.
5. Desertification.





# METHODS OF CONTROLLING SOIL EROSION/SOIL CONSERVATION PRACTICES



## **Strip Cropping**

Groundcover plants such as grasses are planted in strips between fields of crops. The strips of groundcover soak up rain and slow runoff.



## **Terracing**

Step-like terraces are built on slopes. They prevent runoff from rushing downhill and carrying away the soil.



## **No Till Planting**

Seeds are planted in the ground without first tilling (plowing) the soil. Dead plants from the previous crop remain on the ground. Their roots hold the soil in place.



## **Windbreaks**

Rows of trees are planted between fields. The trees slow down the wind and reduce wind erosion.



## **Contour Cropping**

Crops are planted in curving rows to follow the contour of hills. This slows runoff and reduces erosion.



## **Cover Crops**

Fields are planted year-round, even in seasons when crops don't grow. The plants cover the soil and hold it in place.

## HOW TO PREVENT SOIL EROSION: 7 EFFECTIVE TECHNIQUES

- 1 PLANTING VEGETATION
- 2 MULCHING
- 3 CONTROLLING RUNOFF
- 4 IMPLEMENTING TERRACING AND CONTOURING
- 5 USING EROSION CONTROL BLANKETS AND MATS
- 6 FENCING AND CATTLE EXCLUSION
- 7 REGULAR MAINTENANCE AND INSPECTIONS

# REDUCTION OF SOIL FERTILITY

- *Explain how each of the following activities reduce soil fertility*

<p>Trampling of animals and moving vehicles</p> 	<p>Soil erosion</p> 	<p>Use of artificial fertilizers</p> 
<p>Sand mining</p> 	<p>Polyethene dumping every where</p> 	<p>Bush burning</p> 
<p>deforestation</p> 	<p>charcoal burning</p> 	<p>monoculture/estate growing of crops</p> 



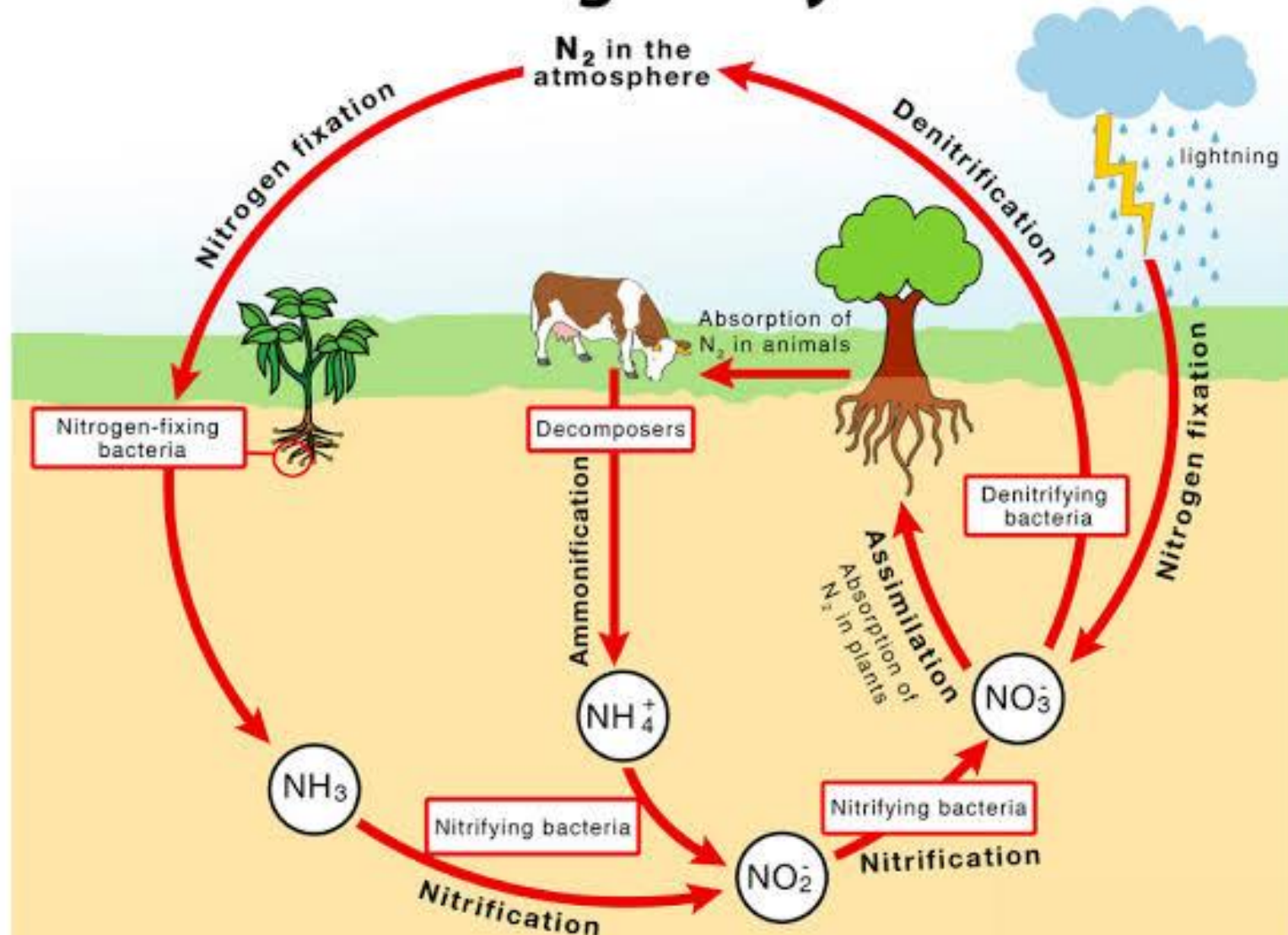
**HAVING FOUND OUT ABOUT THE DIFFERENT CAUSES OF LOSS OF SOIL FERTILITY, SUGGEST WAYS OF MAINTAIN SOIL FERTILITY IN THE FOLLOWING REGIONS**

- ❑ Lake Victoria basin**
- ❑ Kigezi highlands**
- ❑ Karomoja region**

# NITROGEN CYCLE

- Nitrogen is the most abundant element in the atmosphere making up to \_\_\_% but much of it is not used because it has a triple bond between its atoms which requires a lot of energy to be broken down thus it requires a lot of conversions.
- **Research about five importances of nitrogen towards the plants?**
- the nitrogen cycle describes processes involved in the interconversions of nitrogen in the different forms
- **The processes involved include:**
  - **Nitrogen fixation**
  - **Nitrification**
  - **Ammonification**
  - **Denitrification**
  - **assimilation**

# Nitrogen Cycle





## PROCESSES IN THE NITROGEN CYCLE

### ○ **Nitrogen fixation**

This takes place during lightening, using artificial fertilisers , by nitrogen fixing bacteria like *Rhizobium spp* ,*death and decomposition by living organisms and other sources as seen in the diagram above*

### ○ **Ammonification**

This is the conversion of organic compounds into ammonia. The organic compounds are usually as a result of death and decay.

### ○ **Nitrification**

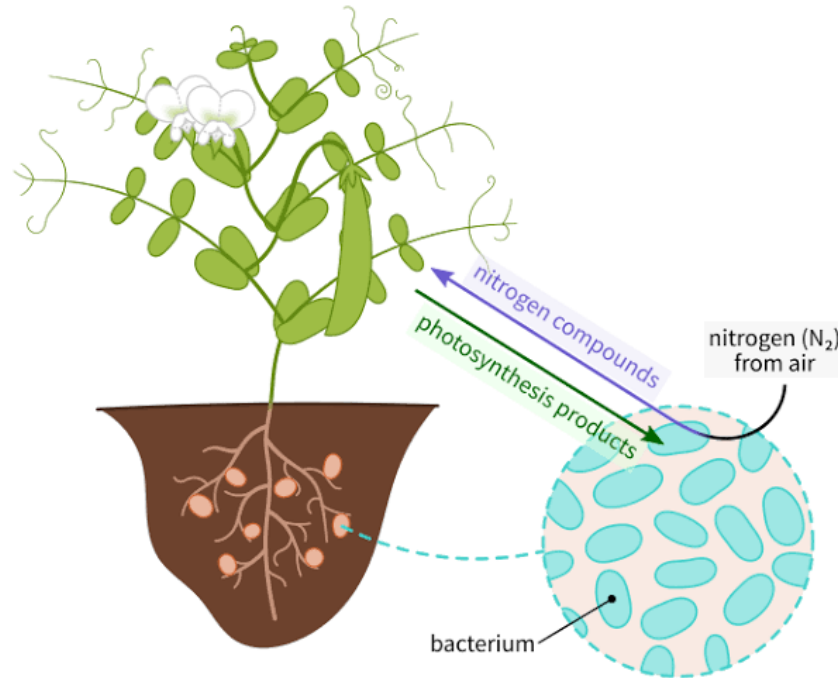
This is the conversion of ammonia into nitrites and then the nitrites are converted into nitrates which are taken up by plants through a process called ***assimilation***.

### ***Denitrification***

Loss of nitrogen to the atmosphere.

# MICRO ORGANISMS IN ROOT NODULES

- When bran or any other **leguminous plant** is uprooted, there are swellings called root nodules. They contain micro organism that can convert atmospheric nitrogen into other forms that can be taken up by the plant.



# EFFECTS OF HUMAN ACTIVITIES ON THE NITROGEN CYCLE

**Explain of the effects of the above activities towards the nitrogen cycle**





# Any Questions