

Lesson 3

Soil Erosion and Conservation

Learning Objectives

By the end of the lesson you will be able to:

- Recognize the importance of soil
- Explain the process of soil formation
- List the ways in which soil get eroded
- Identify the human activities that have increased soil erosion
- List the methods of soil conservation

Soil –The upper most layer of the earth is called soil. It is made up of tiny particles of broken rocks, remains of dead plants and animals. Soil contains many micro organisms.

Importance of soil

Soil is extremely important for the living things. Plants and trees grow in the soil. It provides all the minerals that plants need to grow. Soil also provides shelter to many animals eg. rabbits, ants, earthworms ,etc.

Formation of Soil

Soil is formed by the breaking down of rocks into small pieces by a process called **weathering**. It can be caused by animals, plants, rain, flowing water, wind and weather changes. They continuously erode the rocks into tiny grains of soil. This is however, a very slow process. It takes millions of years for rocks to breakdown in tiny particles that form the soil.

Soil Erosion

The process of carrying away soil by water or wind is called soil erosion.

The factors that are responsible for soil erosion are known as the agents of soil erosion.

They are discussed below.

Erosion by water – Running water causes the maximum amount of soil erosion. It is greater in hilly areas as water flows down faster. When the rain falls the running water carries away the topsoil. Soil erosion by water is greater in hilly areas as water flows down faster. On reaching the plains, the flow of rivers slows down and the part of the soil is deposited on the way. Due to removal of the fertile topsoil the land becomes barren or unsuitable for farming.



Erosion by wind – Strong wind causes the topsoil to be blown away, particularly in those areas where there is less vegetation or no vegetation to hold the soil. Wind erosion is greater in deserts.



Erosion due to human activities – Human activities have reduced plant cover and caused an increase in soil erosion.

Deforestation, farming/ ploughing and overgrazing increases soil erosion.



Soil Conservation-The protection of soil against erosion is known as soil conservation.

Soil can be conserved by afforestation, providing soil cover, growing shelter belts, by terrace farming on hill slopes and by building embankments.



LOOKING BACK - Pg no.21 TO BE DONE IN NOTEBOOK.

1. Why is the top layer of the soil the most fertile?

A1. Because it contains water and humus.

2. How does soil erosion by water cause floods?

A2. When it rains in hilly areas the soil gets washed away towards the plains. As this deposited soil increases over the years, it changes the course of the rivers. Thus leads to flood.

3. How do human activities cause soil erosion?

A3. Human activities cause soil erosion by deforestation, ploughing and by making cattle to graze on the same piece of land.

EXERCISES

TO BE DONE IN BOOK.

A. Multiple choice questions:

1. pollution 2. fast flowing river 3. flood 4. step farming

B. Mark ✓ for true and x for false statements.

1. ✓ 2. ✓ 3. ✓ 4. x 5. x

C. Find the answers in the grid. (Homework)

2. Roots of plants bind the soil particles and prevent soil erosion.
3. Soil erosion due to flowing water is more on hill slopes than on plains.
4. Soil in farmlands is less likely to get eroded after a crop is harvested.
5. Terrace farming is done mainly to reduce soil erosion due to wind.

C. Find the answers in the word grid.

- Breaking down of rocks into small pieces
- The topmost layer of soil
- Strong embankments made along river banks
- Clearing of forests by humans
- The removal of soil by water or wind
- Rocks are broken into this first on weathering
- Steps cut into the surface of a hill

A	E	I	O	U	D	E	U	A	O	I	E	W
P	M	K	R	S	A	T	E	R	R	A	C	E
I	O	T	G	N	P	M	K	P	G	M	O	A
D	P	A	E	K	U	S	T	M	A	T	G	T
U	E	R	O	S	I	O	N	K	M	O	R	H
A	B	I	M	K	D	T	G	E	T	P	D	E
O	B	U	N	D	S	O	R	N	I	S	U	R
T	L	U	N	S	N	I	M	U	D	O	M	I
D	E	F	O	R	E	S	T	A	T	I	O	N
O	S	U	E	P	M	U	O	A	R	L	E	G

D. Fill in the blanks.

D. Fill in the blanks:

1.rocks 2.weathering 3.deforestation 4.conservation 5.Step/Terrace

TO BE DONE IN THE NOTEBOOK.

E. Answer the following questions.

1.How is soil useful for living things?

A1.Soil is useful for living things as plants take the nutrients from the soil to grow and make food. All animals depend on plants directly or indirectly for food. Many animals live in the soil eg. rabbits , ants, earthworms, etc. We also use products from the soil to build their homes.

2.What is weathering of rocks? In what way is it useful to us?

A2.Weathering of rocks is a process in which soil is formed by the breaking down of rocks into small pieces. It is useful to us as it makes soil naturally and provide minerals to the soil which is used by the plants and other human activities.

3. What do you mean by soil erosion?

A3.The process of carrying away soil by wind or water is called soil erosion.

4. How is soil eroded by water?

A4.As rainwater flows over the land ,it carries a part of the soil with it. This results in soil erosion. It is greater in hilly areas as water flows down faster. Fast flowing rivers particularly in hilly areas , cause the soil to be eroded from the banks. Thus the rivers carry more and more soil as they flow down.

5. In what ways have the activities of humans resulted in increased soil erosion?

A5.Following activities of humans resulted in increased soil erosion.

- i. Deforestation –Humans cut forest to build farms, cities, factories, roads and furniture. This leaves the land barren and increases soil erosion.
- ii. Ploughing – When farmers plough, they leave the soil loose which might lead to the soil being eroded easily.

iii. **Overgrazing** – Overgrazing by cattle exposes the soil by removing the plant cover, this causes increased soil erosion.

6.How do the following help in reducing the soil erosion?

i. **Planting trees** – Planting trees or afforestation is very effective in preventing soil erosion as the roots of the plants/trees binds the soil particles and prevents the soil from getting eroded.

ii. **River embankments** – Strong embankments of rocks and soil (also called bunds) are build along the rivers to prevent soil erosion. High bunds on land also prevents soil from getting eroded.

iii. **Step farming or Terrace farming** – Terrace farming is done by cutting steps in the slopes. This decreases the speed of water as it flows down, thus reduces soil erosion. In this the soil eroded from first step is deposited on the next step. Hence further reduces loss of soil.

iv. **Soil cover** – After the crops are harvested and before the new crops are sown, the soil remains bare which can easily be eroded by wind or water. So farmers either grow cover crops or grasses to prevent the land from getting barren.

Higher Order Thinking Skills

1.Without soil, is it possible for us to survive on this planet? Why?

A1.No, without soil it is not possible to survive on this planet because all living things depend directly or indirectly on soil.

2.Sometimes, farmers leave the stumps and roots of harvested crops on the field and do not remove them. What can be the reason?

A2.The reason is that the stumps and roots of harvested crops get mixes with the soil to form humus. It increases the fertility of the soil and also increases crop yield.