SCIENCE

SOIL (SOIL PROFILE AND TYPES OF SOIL)

SOIL

It forms the upper surface of the land and supports plant growth. Soil is the layer of unconsolidated particles derived from weathered rock, organic matter (humus), water and air.

Soil is an important resource that decides the diversity of life in an area.

The outermost layer of our Earth is called the crust and the minerals found in this layer supply a variety of nutrients to life forms.

SOIL FORMATION

Soil is formed from parent rock material over millions of years by a process of weathering. Weathering is the process of breaking down of rock present on the surface of earth into fine particles.

Weathering occurs by two main proceses:

- (a) Physical weathering, which is caused by physical phenomena like atmospheric changes (heating. cooling, wetting-drying etc).
- (b) Biological weathering, which involves breaking down of rocks by the action of living organisms.

Factors or Processes for soil formation

- 1. Sun: During the day, sunlight heats up the rocks on the Earth's surface and during the night, it cools them down. Rocks expand when heated and contract when cooled down. This repeated heating and cooling of rocks causes them to break down into smaller particles.
- 2. Water: It causes weathering of rocks by following methods:
 - Water enters the rocks through the crack in them and freezes at low temperatures.
 This expands and contracts the rocks, which results in the breaking down of the rocks.
 - (ii) Sometimes, water flows along rocks. The flow of water along the rocks creates a friction between water and rocks, which results in the weathering of rocks. This leads to the formation of soil. The soil thus formed may flow along with the water and get deposited elsewhere.

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- (iii) Continuous heating of rocks by rain and hail, and wave action on shores causes breaking down of rock particles into finer particles through their abrasive effect.
- 3. Wind: Wind has an abrasive action due to the presence of dust and fire sand particles in it. Strong winds erode the rock surfaces by rubbing and striking its abrasive particles against the rock surface. Sometimes the eroded particles are carried by wind to distant places. As wind speed decreases, the wind-borne particles settle down and form soil.
- 4. Frost: Rain water seeping into rock crevices and cracks may get trapped in it. In winter, this water freezes to ice. The ice expands producing a lateral pressure sufficient to break all rocks.
- 5. Living organisms: Weathering by living organism is known as biological weathering. Certain life forms, like lichens, grow on rock surface. They secrete acids which corrode the rocky surface and produce fine particles. Then, in these fine soil particles other organisms like microbes; insects etc grow and die, building more soil.

Sometimes, mosses grow over these crevices. They cause deepening of crevices and building up of more soil in them. Deeper crevices form cracks. Roots further weather the rocks and produce soil.