Soil Erosion – A great threat to the agriculture production

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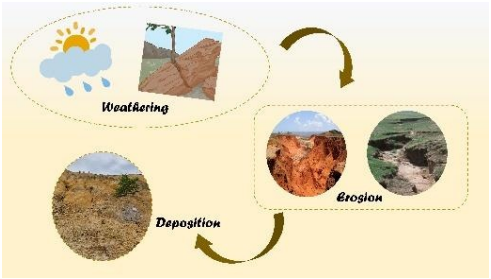
Only those who make a living by using soil directly care for soil. Society at large does not value soil as a resource due to their ignorance about the fact that life on earth depends on a few centimeters of surface soil layer. About thousands of years must have taken to develop a soil that enables forests, grasslands, shrubs and agricultural crops etc. to occupy that we see today. However, it takes only several minutes to remove this thin layer of fertile soil by a single rainfall event or wind, via a process called soil erosion.

Soil erosion is a serious issue that imposes a threat to sustain vegetation and food production. Practicing agriculture on eroded soils is not profitable as the quality and quantity of the crop yields are low. There are many off-site effects of soil erosion as well. Eroded soils could block irrigation channels and drainage lines leading to frequent flooding events. Moreover, erosion can carry soil particles along with contaminants such as fertilizer and pesticide residues if water flows over agricultural lands. As we often observe, garbage originated from households and industries ended up in water bodies after heavy rains. Thus, surface water becomes polluted and less suitable for the use of common purposes such as drinking and irrigation.



At present, approximately 75 billion tons of fertile soils have been removed from agricultural areas by soil erosion Therefore, soil erosion is considered as the major process of soil degradation that limits the productivity of agricultural lands. The Food and Agriculture Organization (FAO) has estimated about 50% of crop yield loss due to soil erosion. Thus, FAO of the United Nations has identified soil erosion as one of the biggest threats to global food security.

Erosion is a natural phenomenon

Erosion is a natural process that occurs in many environments. The action of wind, water, or glacier can remove the surface soil easily when it is exposed without vegetation. Rain drops could break down soil clods or aggregates into small particles on the surface soil and carry on with the surface runoff water. Wind currents can also pick up loosen soil particles on the surface soils and settle elsewhere perhaps hundreds of meters away from the origin. In glacier erosion, flowing ice erodes the land and deposits the sediments elsewhere.

Water erosion is the most important and as its damage to land resources is substantial. Soil scientists have identified five types of soil erosion as a result of water.

Types of water erosion

Sheet erosion

Rill erosion

Gully erosion

Bank erosion

source: Jim Ritter, P. (2012). Replaces OMAFRA Factsheet, Soil Erosion; Causes and Effects. (http://www.omafra.gov.on.ca/english engineer/facts/12-

Sheet erosion removes the finest soil particles containing nutrients and organic matter from the fertile surface soil layer. Rill erosion is the most common form of erosion that occurs during heavy rains. Here, soils are displaced through tiny channels called rills