

ENDANGERED SOIL

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soil quality. More soil friendly and less intensive farming practices need to be adopted to preserve soil fertility.

(9) As well, as cities expand in size and numbers, more concrete covers over arable land and heavy urban machinery compacts the soil. Compaction causes air pockets in the soil to be squeezed out making it harder for gases and water to penetrate the soil. Compaction also makes it harder for plant roots to grow.

(10) Soil erosion and climate change is also a big factor in soil loss. When trees are cut down for their wood and cleared to make farmland,

soil is more easily washed away after a rainfall. Without tree roots, the soil can't anchor itself to the earth. One big storm can wash away soil that took thousands of years to form. Climate change has also turned some fertile lands into deserts and others into flood plains, thus removing the use of these lands for agriculture.

(11) Over half of the Earth's topsoil has been lost in the last 150 years. By 2100 there will be an estimated 11 billion people on the planet. If we don't manage and preserve our soils more intelligently, then the ability to feed everyone on the planet will be in jeopardy which might trigger global resource wars.

Article Questions

- 1) What are some of the living organisms found in soil?
Small insects, worms, fungi and microorganisms are found in soil.(3)
- 2) What is pedology and pedogenesis?
Pedology is the study of soils and how they form.(4) Pedogenesis is the formation of soil.(5)
- 3) What is the rate of pedogenesis for topsoil?
It takes 500 to 1000 years to form one inch of topsoil.(5)
- 4) Why is topsoil pedogenesis so slow?
For topsoil to form, the parent material/rock that makes up the mineral base of the soil must be broken down. The process of weathering accomplishes this, but very slowly.(6)
- 5) In commercial modern agriculture, why do soils eventually suffer from nutrient exhaustion?
As more crops are grown on the soil, these crops suck up all the nutrients in the soil. The nutrients don't get replaced and this leads to soils that are exhausted of their nutrients.(8)
- 6) Describe two reasons why the use of synthetic fertilizers is not the answer to decreasing soil quality.
 - 1) Synthetic fertilizers usually only return the top three nutrients: nitrogen, phosphorus and potassium and not the others.(8)
 - 2) Chemically loading the soil in this way is harmful to the organisms in the soil.(8)
- 7) How does cutting down trees lead to soil erosion?
Tree roots help anchor the soil. Without these roots, the soil is more easily washed away by rain.(10)
- 8) How do you think food security is linked to "food resource wars"?
Food security is the access people have to adequate food and nutrition. If food production declines and food security is threatened, food resource wars can erupt over the scarcity of food.(1, 11)