**Unit Assessment Statements--Soil and Food Production**

• The soil system may be illustrated by a soil profile that has a layered structure (horizons).

• Soil system storages include organic matter, organisms, nutrients, minerals, air and water.

• Transfers of material within the soil, including biological mixing and leaching (minerals dissolved in water moving through soil), contribute to the organization of the soil.

• There are inputs of organic material including leaf litter and inorganic matter from parent material, precipitation and energy. Outputs include uptake by plants and soil erosion.

• Transformations include decomposition, weathering and nutrient cycling.

• The structure and properties of sand, clay and loam soils differ in many ways, including mineral and nutrient content, drainage, water-holding capacity, air spaces, biota and potential to hold organic matter. Each of these variables is linked to the ability of the soil to promote primary productivity.

• A soil texture triangle illustrates the differences in composition of soils.

• The sustainability of terrestrial food production systems is influenced by factors such as scale; industrialization; mechanization; fossil fuel use; seed, crop and livestock choices; water use; fertilizers; pest control; pollinators; antibiotics; legislation; and levels of commercial versus subsistence food production.

• Inequalities exist in food production and distribution around the world.

• Food waste is prevalent in both LEDCs and more economically developed countries (MEDCs), but for different reasons.

• Socio-economic, cultural, ecological, political and economic factors can be seen to influence societies in their choices of food production systems.

• As the human population grows, along with urbanization and degradation of soil resources, the availability of land for food production per capita decreases.

• The yield of food per unit area from lower trophic levels is greater in quantity, lower in cost and may require fewer resources.

• Cultural choices may influence societies to harvest food from higher trophic levels.

• Terrestrial food production systems can be compared and contrasted according to inputs, outputs, system characteristics, environmental impact and socioeconomic factors.

• Increased sustainability may be achieved through:

– altering human activity to reduce meat consumption and increase consumption of organically grown and locally produced terrestrial food products

– improving the accuracy of food labels to assist consumers in making informed food choices

– monitoring and control of the standards and practices of multinational and national food corporations by governmental and intergovernmental bodies

– planting of buffer zones around land suitable for food production to absorb nutrient runoff.

• Soil ecosystems change through succession. Fertile soil contains a community of organisms that work to maintain functioning nutrient cycles and that are resistant to soil erosion.

• Human activities that can reduce soil fertility include deforestation, intensive grazing, urbanization and certain agricultural practices (such as irrigation and monoculture).

• Commercial, industrialized food production systems generally tend to reduce soil fertility more than small-scale subsistence farming methods.

• Reduced soil fertility may result in soil erosion, toxification, salination and desertification.

• Soil conservation measures include soil conditioners (such as organic materials and lime), wind reduction techniques (wind breaks, shelter belts), cultivation techniques (terracing, contour ploughing, strip cultivation) and avoiding the use of marginal lands.