**Section 12.3 Summary: Sustaining Fertile Soils (pages 432-445)**

1) There are several conditions that contribute to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (the process in which nutrient depleted soils are formed through erosion of fertile soil):

-Soil is exposed to the direct action of rain and wind when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is removed by harvesting crops.

-Topsoil, which contains the nutrient-rich \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, can be eroded and carried away.

-Without plants, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ slows and sometimes stops because humus is no longer being produced.

-When \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is removed from land that receives little rain, plants do not return.

2) Modern farming practices can contribute to the destruction of land:

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ requires that farmers plough long straight lines which can cause loss of topsoil due to water erosion.

-Trees that are used as windbreaks often have to be cut down to make larger fields which can cause loss of topsoil due to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

-Marshes might be drained or fields ploughed right to the edge of rivers or streams which can cause the elimination of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

-The machinery relies on the combustion of fossil fuels, which adds to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3) Extra water in the soil (due to removal of vegetation) and irrigation increases groundwater. Excess groundwater leaches \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the soil, which collects over time and causes the soil to be less \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4) Healthy, growing plants require large amounts of three \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (nitrogen, phosphorus, and potassium).

5) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the method of planting a different crop in a field each year. This ensures that the nutrients used by one crop are replaced the following year by a different crop.

6) The most common method of enriching the soil is to apply \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (substances that provide nutrients for plants).

7) There are several types of fertilizers:

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is made from the breakdown of plant and other organic material (leaves, manure, vegetable peelings, etc.)

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from livestock is often used to add organic matter, improve soil structure, and increase nutrients and biological activity.

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ may be natural or synthetic (bone meal, fish emulsion, seaweed, volcanic ash, rock dust, etc.)

8) The unintended negative effect of fertilization is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (algal blooms > fish kills, substances in fertilizers, pesticides, and herbicides get in to water systems > pollution of human drinking water).

9) An ecological approach to farming may include:

-Reducing reliance on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

-Limiting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ farming (leaving previous plant stalks to secure topsoil).

-Planting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.