

Unit 3 – Sustainable Agriculture and Forestry

Ch. 5 - Section 5.1

Where does our food come from? Some people think food just comes from the _____! Many people in developed countries live in cities and do not have firsthand appreciation for where our food actually comes from. Our food comes from prairie _____, lakes, oceans, _____, orchards, etc.

Basic requirements of _____

Plants need _____, _____ from the atmosphere, water, nutrients and _____, and _____ to survive in their environment.

Soil is composed of mineral grains, _____, water, an _____ material that supports plant life.

A soil _____ is a series of horizontal layers in soil.

The topmost layer is called surface _____. It is composed mainly of loose organic material that may be partially decomposed.

The second layer is _____. This is a dark colored layer with large amounts of organic matter mixed with _____.

The third layer is _____. This layer contains less organic matter and fewer organisms than topsoil. It accumulates _____ leached from topsoil.

The fourth layer is _____ particles which contains no organic matter. The chemical content of materials in this layer helps determine the _____ of the soil.

And finally the fifth layer is called _____ and is a solid layer of rock.

_____ is organic material resulting from the breakdown of plant and animal remains.

Beneath the surface of soil countless _____ form a network of food chains and open up spaces for air and _____ to move through the soil.

Soil properties

_____: this refers to the size and number of _____ among the particles of the soil. If something is very porous, water can _____ freely through it.

_____: this is the measure of acidity of the soil. pH above _____ is basic, PH below seven is acidic. A PH around seven is considered _____. pH determines how easily the nutrients can be _____ from the soil; which in turn determines what kinds of plants can grow.

**Page 139 contains a chart detailing plant nutrients and their function. Study this chart.

_____ gives plants their dark green colour.

_____ helps plants develop roots buds and seeds.

_____ builds strength and disease resistance and improves quality of plant seeds.

_____ is needed for photosynthesis.

_____ helps develop healthy cell walls.

Section 5.2

_____ is the practice of raising plants and livestock for _____ and other human needs.

A _____ is the growth of a single crop over a large area of land. Repeated monoculture can use up certain _____ in the soil very quickly requiring fertilizers to supplement these missing nutrients. A crop _____ includes growing different kinds of seeds that will use different nutrients and deposit different nutrients back into the soil.

The three nutrients that are most often depleted and farmers' fields are _____, _____, and potassium.

Synthetic _____ are very important to crop yields around the world, but can have negative effects on _____ ecosystems when excess nutrients are washed into lakes and rivers.

One such contamination involves _____ blooms. When concentrations of nutrients such as phosphorus and _____ become too high in water sources, algae reproduce in large numbers very quickly. When these algae _____, bacteria in the water decompose them. During this process large amounts of _____ in the water are used up. Fish and many other aquatic organisms cannot _____ without oxygen.

_____ are chemicals used to kill or control unwanted populations of fungi, _____, or plants.

Pesticides can kill organisms unintentionally, and chemicals can _____ up over time to negatively affect the _____ and humans.

_____ is adding water to an agricultural field to increase yield.

Genetically _____ Organisms result from taking one small section of DNA (called a _____) from one organism and inserting it into another organism.

Crops have been genetically modified by inserting a gene from a certain type of bacterium which kills the _____ that eat it.

Another kind of genetic modification involves _____ resistance. The farmer can spray a herbicide to kill the _____ and it will not affect the crop.

Section 5.3

Sustainable agriculture is producing food to meet the _____ of the present without compromising the ability of future generations to meet their needs.

One aspect of sustainable agricultural is _____ planting. In this practice two or more plant species are planted _____ so that some benefit to occurs. This happens in a _____ containing a diversity of crop types.

Ancient aboriginal polyculture practices uses the “three sisters”: _____, beans, and _____.

The corn provides a good structure on which the _____ can grow up: the beans return _____ to the soil, which benefits the squash; and the squash provides dense _____ coverage and ground cover which helps keep weeds from growing and retains _____ in the soil.

Soil conservation involves both reducing soil _____ and maintaining soil _____.

Crop _____ is the practice of growing different crops at different times on the same land.

_____ is produced when microorganisms in soil breakdown organic matter in the presence of oxygen.

_____ is the general term for protective ground cover.

_____ is **Integrated Pest Management**. _____ substances and crop rotation contribute to IPM. Biological pest control involves introducing _____ that eliminate undesired pests. <https://pressbooks.lib.vt.edu/emgtraining/chapter/7/#chapter-233-section-2>

Another aim of Renewable Energy Agriculture is to reduce the use of _____ fuels and replace them with renewable sources of energy such as solar power, _____ power, or hydropower.

An organic product is one that has been produced without the use of _____ fertilizers or pesticides, _____, antibiotics, synthetic additives, genetically modified ingredients, or _____. Irradiation is the exposure of radiation for the purpose of killing microorganisms.

Section 5.4

Meat from cows, hogs, chickens, and other animals is an important source of _____, iron, fats and other nutrients that give us _____ to lead productive lives

_____ products are also a key protein source.

About _____% of all livestock are raised in Confined Animal Feeding Operations (_____ 's).

_____ is the conversion of arid and semiarid lands into deserts by inappropriate farming practices or overgrazing. Arid lands are lands that do not get a lot of natural _____. Farming practices in these areas need to be efficient.

CAFO's provide a place where water and _____ can be easily dispensed and production of livestock is efficient. The disadvantages include large required inputs of _____, enormous amounts of _____, the higher chance of developing and communicating infectious _____ among livestock.

Rotational _____ confines animals to a small area pasture for short time before shifting them to a new _____. This can prevent overgrazing by allowing the pasture to replenish itself.

Section 5.5

_____ is the breeding, raising, and harvesting of animals in specifically designed _____ environments.

Aquaculture is being developed because lakes and oceans are becoming _____. This means that the existence of certain aquatic species is threatened due to too much _____.

On page 160 figure 5.20 explains different fishing methods. Study these different methods.

Study the Ch 5 summary on page 168 and 169.