**Chapter 15 Section 2 Notes**

**Traditional agricultural methods**
- manual or animal plowing
- organic fertilizers

**Modern agricultural methods**
- plowing with machines
- irrigating with drip systems
- applying chemical fertilizers

- Earth's available arable land is being reduced by
  - fast growing human populations
  - soil erosion
  - desertification (decreases the amount of agricultural land available)

**Fertile Soil** – soil that can support the growth of healthy plants
- soil layers from the top down
  - surface litter, topsoil, leaching zone, subsoil, and bedrock
- most of the living organisms in fertile soil are found in the surface litter and topsoil
- fertile topsoil is caused by: minerals supplied by rock particles, decomposition action of fungi and bacteria, and earthworms' breaking down the soil

**Soil Erosion** – is a danger whenever the soil is bare and exposed to wind and rain

**Land Degradation** – causes desertification

**Soil Conservation** - includes measures that prevent downhill erosion
- **methods:** no-till farming (crop is harvested without turning over the soil which causes less erosion), contour plowing, building terraces

**Salinization** – accumulation of salts in the soil; can be caused by low rainfall or long-term irrigation

**Pest Control**
- major crop pests are fungi, insects, and weeds

**Pesticides**

**Pesticide Resistance** - caused by high pesticide use and is an example of evolution

**Pollution and Persistence**
- persistent pesticide – not easily broken down in the environment
- environmental problems associated with pesticide use in the US
  - human health concerns
  - pesticide persistence
  - pesticide resistance

**Biological Pest Control** - aims to maintain tolerable pest levels, leave non-pest species unharmed, and boost plants' natural defenses
- Biological pest control Tools
  - Pathogens
  - Plant Defenses
    - pheromone – produced by an organism; influences another organism's behavior
  - Chemicals from Plants
  - Disrupting Insect Breeding

**Integrated Pest Management** – aims to reduce pests with minimal economic damage; can include chemical pest control, biological pest control, and a mix of farming methods;

**Genetic Engineering**
- genetic engineering of plants is a faster way of producing the same results as plant breeding
- with genetic engineering the desirable traits are transferred