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| |  |  | | --- | --- | | |  | | --- | | **Chapter 12 Summary**  1. Even though food production has leveled off in the last 25 years, the world still produces enough food to meet the basic nutritional needs of people. However, the food cannot be evenly distributed throughout the world, leading to malnutrition and starvation. Many of these deaths come from malnutrition, which leads to a lack of resistance to diseases. Modern agricultural techniques create significant environmental harm, but the green revolution is also responsible for large increases in agricultural productivity.  2. Three systems produce foods for human consumption. Croplands produce mostly grains, about 77% of the world’s food. Rangelands provide meat, about 16% of the world’s food. Ocean fisheries supply about 7% of the world’s food.  3. Soils are degraded and eroded by water, wind, and people. Soil erosion is primarily caused by flowing water and wind. Human activities, such as farming, logging, construction, off-road vehicles, etc., also disturb soil and hasten erosion. In much soil there is also salt buildup and waterlogging. Crops can be planted today with less soil disturbance through conservation-tillage, tillage, contour farming, and strip farming. Farmers may also use cover crops to help hold the soil in place. Several crops planted between trees and shrubs, alley cropping, help preserve soil and its productivity. And windbreaks are used to prevent soil from being blown away. Conservation and fertilization can be used to restore soil fertility, but fertilizing with commercial pesticides brings its own set of problems.  4. The green revolution uses particular methods to raise crops. Monocultures are developed and planted, bred selectively, or genetically engineered to produce high yields of particular crops. Large amounts of fertilizer, pesticides, and water are added to the crops. Yields of crops are increased through multiple cropping throughout the year. The second green revolution since 1967 involved using fast-growing dwarf varieties of wheat and rice in countries with tropical and subtropical climates. Traditional agriculture: uses interplanting, several crops grown together on the same area of land; uses agroforestry, which grows crops and trees together; and applies polyculture, where various plants are planted together but mature at different times.  5. Food production can be increased by using crossbreeding techniques on similar organisms and using genetic engineering on different organisms. Genetic engineering, including using advanced tissue culture techniques, is growing in use; but many people are concerned about the potential harm such crops may cause. Irrigating more land and cultivating more land are additional solutions but they may not prove sustainable. Rangelands can be managed more efficiently, with the land area better protected; but a meat-based diet requires substantially more resources than a plant-based diet. Overfishing and habitat degradation dominate the marine environment; better management of this food source and protection of the marine environment would ensure continued availability of fish worldwide.  6. More sustainable agricultural systems can be created by reducing resource throughput and working with nature. Technologies based on ecological knowledge are used to increase crop production, to control pests, and to build soil fertility. Such low-input organic farming is often more friendly to the environment by using less energy than conventional farming demands, and by improving soil fertility. Low-input organic farming is also more profitable for farmers. | | |  | | http://www.cengage.com/images/spacer_tr.gif |