

# Warm-Up

27JAN2016

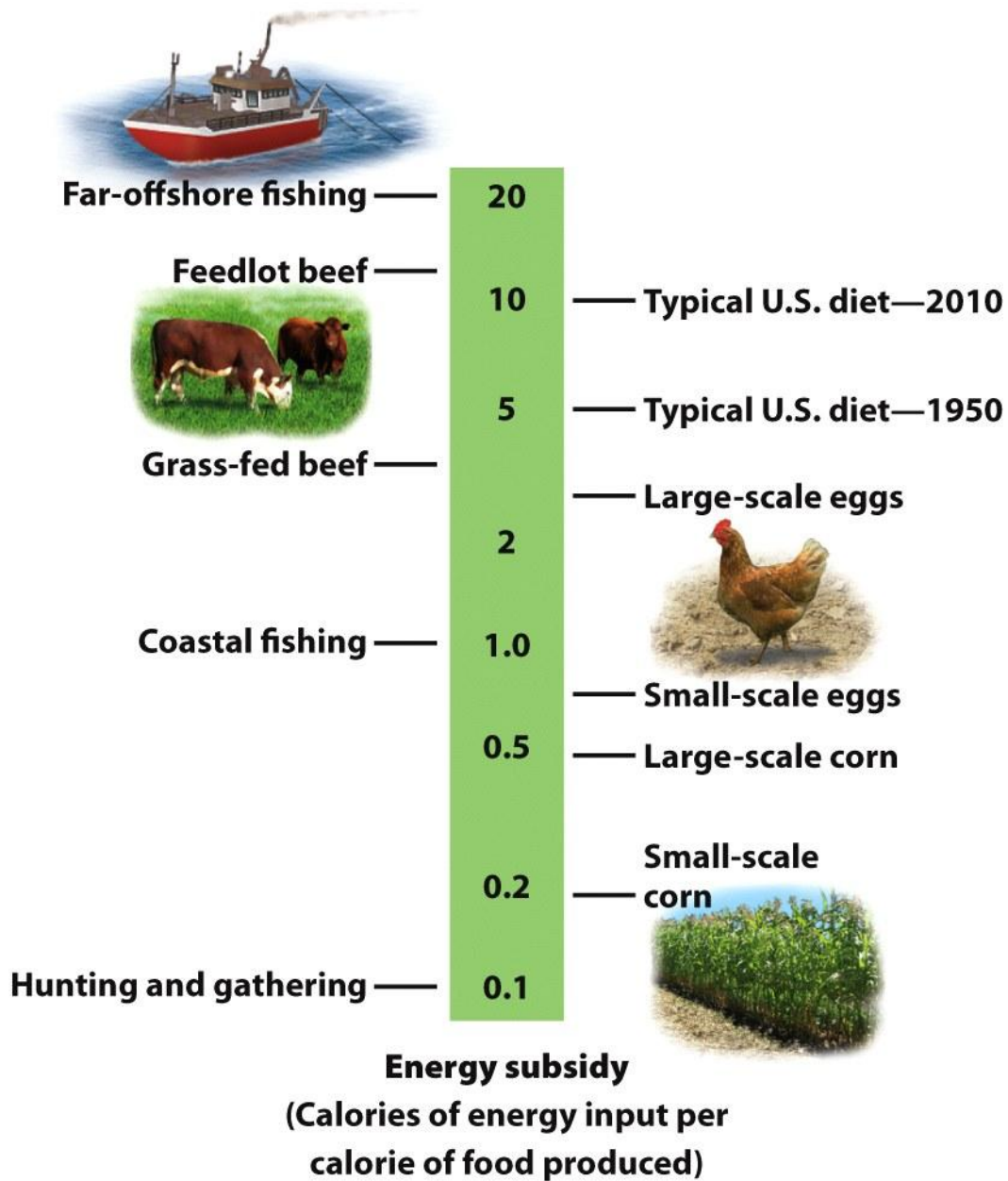
- What are undernutrition and malnutrition?
- What is food insecurity?
- What are some of the possible reasons for food insecurity in the world today?
  
- (if you were absent yesterday, the notes are available at [msleighscience.weebly.com](http://msleighscience.weebly.com))

# 5 key global environmental indicators

1. Biological Diversity
2. Food Production
3. Average global surface temperature and CO<sub>2</sub> concentrations
4. Human Population
5. Resource Depletion

# The Green Revolution

- New management techniques and mechanization as well as the triad of fertilization, irrigation, and improved crop varieties. This has increased food production dramatically.
- Post WWII technologies



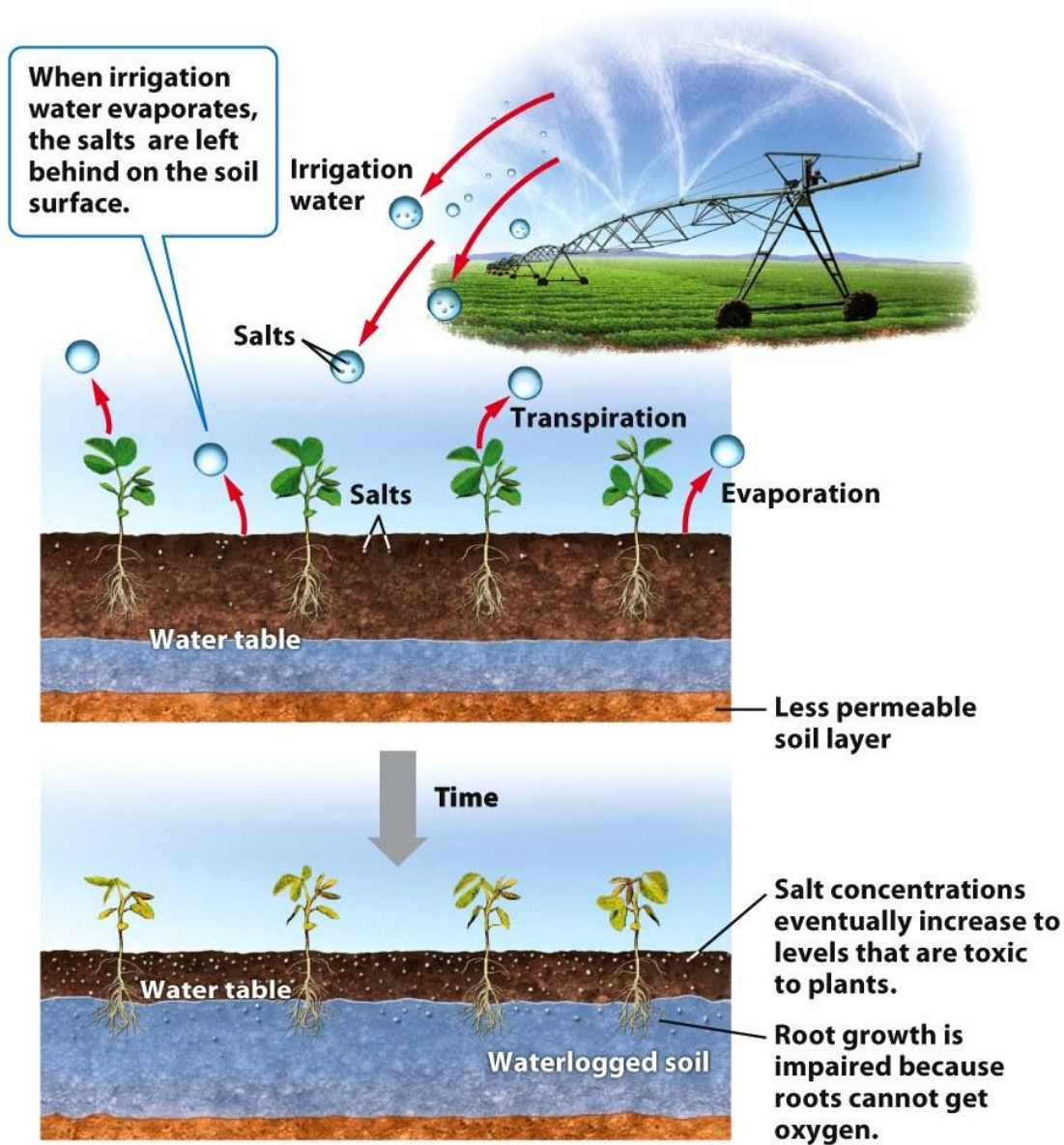
**Figure 11.4**

*Environmental Science*

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# Irrigation Problems

- Waterlogging- when the soil remains under water for prolonged periods which impairs root growth because the roots cannot get oxygen.
- Salinization- when the small amounts of salts in irrigation water become highly concentrated on the soil surface through evaporation.



**Figure 11.6**

*Environmental Science*

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# Fertilizers

- Organic fertilizers- organic matter from plants and animals. Typically made from animal manure that has been allowed to decompose.
- Inorganic fertilizers (synthetic)- fertilizers that are produced commercially. This is usually done by combusting natural gas, which allows nitrogen from the atmosphere to be fixed and captured in fertilizer.



Figure 11.7  
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# Monocropping

- Growing a large amount of a single species of plant.



Figure 11.8  
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# Pesticides

- Pesticide- a substance that kills or controls organisms that people consider pests.
- Insecticide- target insects
- Herbicides- target plants



# Pesticides

- Broad-spectrum pesticides- designed to kill many different types of pests.
- Selective pesticides- designed to kill a narrower range of organisms.



# Pesticides

- Persistent- pesticides that remain in the environment a long time.
- Nonpersistent- pesticide that breaks down relatively rapidly, usually in weeks to months.

# Pesticides

- Bioaccumulation- some pesticides are found to build up over time in the fatty tissues of predators.
  - An example was DDT.
  - When an organism containing the pesticide is eaten, the chemical is transferred to the consumer.
  - This eventually leads to very high pesticide concentrations at high trophic levels.

# Pesticides

- Resistance- pest populations may evolve resistance to a pesticide over time. These are said to be resistant.
- Pesticide treadmill- the cycle of pesticide development followed by pest resistance, followed by development of a new pesticide.

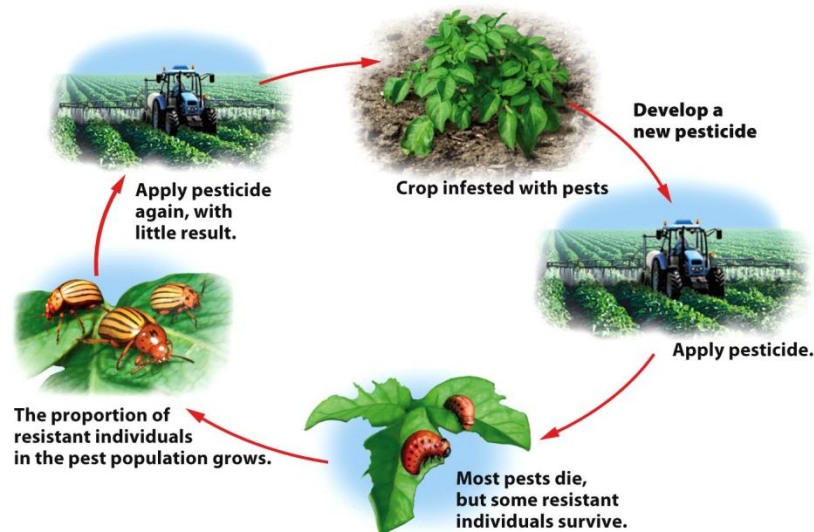


Figure 11.9  
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- Explain the energy subsidy in agriculture
- What are the major features of the Green Revolution?
- What are the pros and cons of pesticide use?



# Warm-Up

29JAN2015

- How was mechanization connected to the Green Revolution?
- What are the 3 main factors that have increased food production?



# Warm-Up

29JAN2015

- How was mechanization connected to the Green Revolution?
  - Not possible without the increase in technology use and abundant resources after WW2
- What are the 3 main factors that have increased food production?
  - Irrigation
  - Fertilization
  - Improved crop varieties

# Logistics

- Today we are going to sample water quality of our ECO-Columns
- If you are not sampling the following is due today:
  - Meat Consumption Graph
  - Diet Calculations
- Due tomorrow:
  - 10 vocabulary and Warm-up sheet



# Warm-Up

30JAN2015

- How was mechanization connected to the Green Revolution?
- What are the 3 main factors that have increased food production?

Due today: 10 vocab and this warm-up sheet graphs and calculations too!

