**Ch. 9 Food and Agriculture**

**Key Issue 4 Why Do Farmers Face Sustainability Challenges?**

**Rubenstein, p.332-345**

1. This is the first chapter in quite a while to directly focus on sustainability. Future development chapters will focus on this issue as well. Recall (or refer to p.32 ☺), what are the three pillars of sustainability?

**I. LOSING AGRICULTURAL LAND**

1. Historically, increases in world food production were due to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Two causes of loss of farmland include:
3. Where in the U.S. is loss of farmland to urbanization especially severe?
4. What human actions contribute to desertification (also called semiarid land degradation)?
5. Desertification is not only occurring in Africa, but also in what other parts of the world?
6. Ironically, excessive water in semi-arid lands can be problematic—how/why?

**II. IMPROVING AGRICULTURAL PRODUCTIVITY**

1. During the second half of the 20th century, the world population \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but the

amount of farmland \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Yet, food production has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Ester Boserup argued that a growing population will influence demand for food and lead to

increased food production. Her argument directly contradicted \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_’ argument (not found in this section, but you’ve studied this!).

1. Boserup argued that subsistence farmers could increase the supply of food through intensification of production in two ways:
2. Define **multi-cropping**:
3. The **Green Revolution**, which began during the 1970s and 1980s, involves what two main practices?
4. How has the Green Revolution influenced the food production-population dynamic?
5. Describe the characteristics of the “miracle wheat seed” and the “miracle rice seed.”
6. What specific problems do farmers in LDCs have that might prevent them from taking full advantage of the Green Revolution?

**III. CONSERVING AGRICULTURAL RESOURCES**

1. Lack of water \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

while too much water can cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Identify and describe California’s two main sources of water. How has several years of drought affected the percent of California’s water sources?
2. Describe the distribution of water versus the distribution of demand for water in California.
3. Rubenstein states that the average American consumes 40 gallons of California water per day. How?
4. Is it fair that California home and business owners have to make cuts to their water usage to accommodate California agriculture? If Californians did not make these cuts, how might that affect Americans around the country?
5. To prevent soil erosion, some Midwest U.S. famers are practicing conservation tillage. Identify and define the two types of conservation tillage:

**IV. APPLYING BIOTECHNOLOGY TO AGRICULTURE**

1. a. Define a **genetically modified organism (GMO)**:

b. How is a GMO different from selective reproduction?

c. What are “Round-up ready” seeds?

1. Identify some statistics showing how GMO usage has increased rapidly in the early 21st century.
2. What are pros and cons of GMO use in general as well as specifically their use in Africa?

|  |  |
| --- | --- |
| **Pros of GMOs Use** | **Cons of GMOs Use** |
|  |  |

1. a. What regions of the world do and don’t require labeling of GMOs?

b. Do you think GMO products should be labeled? Why or why not?

**V. GLOBAL FOOD TRADE**

1. How has the trade of food changed in the last century? (Take notes.)
2. What countries are the top 4 importers of food?
3. Under President Eisenhower’s leadership the U.S. Congress passed the Public Law 480, also known as the “Food for Peace Program.” The two main provisions (note: these are directed at foreign countries & aid agencies) are:
4. Describe the global agricultural trade pattern:
5. The U.S., like most of the western hemisphere, is a net \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of food.
6. Farmers and governments in LCDs must decide whether to produce export crops or crops for domestic production. Why is this a dilemma?
7. In what ways is agriculture in LCDs “gendered work”?
8. Some lead export crops in Latin American and Asia are crops that can be converted into \_\_\_\_\_\_\_\_\_. Identify and take notes on each of the three leading drugs.
9. Why does most consumption of cocaine and heroin occur in developed countries?

**VI. GLOBAL AGRICULTURE AND UNDERNOURISHMENT**

1. In the 21st Century, food production is \_\_\_\_\_\_\_\_\_\_\_\_ and undernourishment is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_;

yet, critics are concerned that the world’s agricultural practices are not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. The greatest challenge to the world’s food supply has been food \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Identify changes in food prices between 2006 & 2015 as well as causes for these changes:
3. Identify food production issues in Africa.
4. Define **undernourishment**:
5. Half of the world’s undernourished people live in (regions) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with the largest numbers in (countries) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Countries with highest percentage of undernourished people are in (regions) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Only 2% of the world’s undernourished people are in \_\_\_\_\_\_\_\_\_\_\_.

Worldwide, between 2000 and 2015, the number of undernourished people has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**VII. SUSTAINABLE AGRICULTURE**

1. In developed countries, demand for food has remained \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ due to

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; however, there has been rapid demand increases for

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ food.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the leader in organic farming. Other leading countries include:
2. What are some characteristics of organic farming?
3. Critics of confined livestock production systems point out that such systems are not sustainable. Why?
4. In the U.S., the livestock are often fed antibiotics—why?

\*Why has the E.U. banned the use of antibiotics for reasons other than medical?

1. The five most pesticide-ridden fruits, with percentages, are:
2. What feature differentiates the cleanest and dirtiest produce?
3. Identify the three U.S. government policies aimed at improving farmers’ lives:
4. Compare farm subsidies in the U.S. and Europe.
5. Identify criticisms of farm subsidies: