

## Chapter 10: Agriculture

### Chapter Outline

**Introduction.** Agricultural practices vary greatly across the world by environmental conditions and level of development. This culture considers the origin and diffusion of agriculture before considering differences between LDC and MDC agriculture.

**Case Study: Wheat Farmers in Kansas and Pakistan.** A snapshot of global differences in agriculture is given by comparing the Iqbel family of Pakistan to the McKinley family of Kansas.

#### Key Issue 1. Where Did Agriculture Originate?

**Origins of Agriculture.** Agriculture originated about 10,000 years ago in a number of hearths based on locally available crops as an alternative to hunting and gathering, which is still rarely practiced on Earth today.

**Subsistence and Commercial Agriculture.** **Subsistence agriculture**, found in LDCs, is the production of food to feed the farmer; **commercial agriculture**, found in MDCs, is the production of food for sale. Subsistence agriculture is very labor-intensive while commercial agriculture makes intensive use of machinery. Subsistence farms are smaller than commercial farms. Commercial farms have complex linkages with other economic sectors, called **agribusiness**, while subsistence farms do not.

#### Key Issue 2. Where Are Agricultural Regions in LDCs?

**Shifting Cultivation.** Shifting cultivation, or **slash-and-burn agriculture**, supports relatively few people on a large amount of land. Located in the Equatorial regions, shifting cultivation is under threat of deforestation and the encroachment of commercial farms.

**Pastoral Nomadism.** Pastoral nomads make use of about 20 percent of Earth's surface but total only about 15 million people. Pastoral nomads migrate seasonally depending on the amount of land allocated to a group and the seasonal changes of climate. Pastoral nomadism is on the decline and will likely be practiced only in marginal land not well suited to other agricultural techniques.

**Intensive Subsistence Agriculture.** Intensive subsistence agriculture features a maximum yield of crops from a small area of land. It is found in East, South, and Southeast Asia. Two subtypes of intensive subsistence agriculture are wet rice dominant and wet rice not dominant. The distinction is important because of the unique landscape required for wet rice cultivation (flat, seasonally flooded fields). Intensive subsistence with wet rice not dominant features labor-intensive cultivation of wheat and barley in regions where rice cannot grow because of cold climate or inadequate precipitation.

**Plantation Farming.** **Plantation** agriculture is a form of commercial agriculture found in LDCs. Common plantation crops include cotton, sugarcane, coffee, rubber, and tobacco.

#### Key Issue 3. Where Are Agricultural Regions in MDCs?

**Mixed Crop and Livestock Farming.** This form of agriculture is found in the American Mississippi/Ohio Basin and northern Europe. Crops, especially corn, are grown as feed

for animals, which are then sold to consumers. Mixed crop farms frequently make use of crop rotation to maintain soil productivity.

**Dairy Farming.** Dairy farming is concentrated near large urban areas in the more developed world. The area where it is profitable to produce milk, a perishable and expensive to transport product, is called the **milkshed**. Dairy farming is an expensive and labor-intensive form of commercial agriculture.

**Grain Farming.** Wheat is the most important grain crop because of its importance as an export crop.

**Livestock Ranching.** Ranching has experienced a decline in open rangeland and increased integration with agribusiness.

**Mediterranean Agriculture.** This form of agriculture is limited to the small areas of the Earth with a Mediterranean climate. Unique crops include grapes and olives.

**Commercial Gardening and Fruit Farming.** Fruit and vegetable producers grow fresh produce for sale to MDC consumers who prefer a diversity of fresh food choices.

#### **Key Issue 4. Why Do Farmers Face Economic Difficulties?**

**Challenges for Commercial Farmers.** Commercial farmers choose which crops to grow based on the market price of that crop and the cost of transport. This relationship was modeled by von Thunen in 1826.

Commercial farmers face economic difficulties because of overproduction, which keeps prices low. Federal policies in the United States attempt to control the potential for overproduction and reduce the shock of low prices on farmers, especially through subsidies.

Commercial farming can exact a high impact on the land. **Sustainable agricultural** practices aim to reduce the impact of farming on the environment through sensitive land management, reducing the use of chemicals, and better integration of crops and livestock.

**Global Forces, Local Impacts: Genetically Modified Foods and Sub-Saharan Africa.** Many nations are concerned with the unknown risks of using genetically modified food crops, which are common in the United States but regulated in many other places.

**Challenges for Subsistence Farmers.** Subsistence farmers face the challenge of increasing food supply in line with population growth in the developing world. They may consider new farming methods or use the land more intensively. An additional challenge exists when countries adopting the international trade approach devote arable land to the production of export crops, which can then not serve to feed the population. LDC farmers sometimes choose to grow drug crops because of their high value.

**Strategies to Increase Food Supply.** Four strategies to increase food supply are: expanding the land under cultivation (but remaining land is of poorer quality); increasing the productivity of existing agricultural land (requiring energy- and resource-intensive fertilizers and machinery) identifying new food sources (subject to cultural preferences); and increasing trade.

## **Introducing the Chapter**

Chapter 10 starts the first of three chapters on the three sectors of the economy (agriculture, industry, and services). Start with a review of these sectors as they are introduced in Chapter 9.

This chapter reveals the isolation of many North Americans from agriculture, as most are not employed in agricultural jobs.

## **Icebreakers**

### **The Meatrix (<http://www.thematrix.com/>)**

This online Flash animation (presently at three episodes) is an entertaining, accessible criticism of industrial meat production. The first presentation reveals the changes to farming practices in the late 20<sup>th</sup> century.

Students should be advised that the presentation is biased against agri-business practices. Recommend that students write down the four major points of the presentation and invite their comments after showing the segment or segments.

Alternatively, consider having students watch the segments independently as part of an assignment (below).

## **Challenges to Comprehension**

### **City Slickers**

Depending on the location of your school, students may be nearly devoid of any knowledge of agriculture. This is different from previous chapters in that every previous chapter had an element which every student could understand in personal terms: not so with this topic for urban and suburban residents.

Use this lack of awareness as a point of teaching for how far removed from the land our society has become.

## **Assignments**

### **Review/Reflection Questions**

- Which of Whittlesey's regions is the "odd duck" in that it doesn't fit perfectly into commercial or subsistence categories?
- When you shop for your food, do you think about where it came from? Does this bother you now that you think about it? Why or why not?
- Pick one of the following common household foods and trace its production, movement, and processing until you purchase it:
  - Hamburger (meat, bun)
  - Banana
  - Coffee

- Apple
- Why do you think Europeans generally avoid genetically modified food while Americans generally do not?
- A major criticism of rich countries regarding international trade and development is that the richest countries in the world also offer the greatest agricultural subsidies to their farmers. How would ending rich-country agricultural subsidies help the less developed world?

## **The Meatrix**

Go online to The Meatrix at <http://www.themeatrix.com/>. Watch the animations and take notes.

Critique the presentation in two to three pages (500-750 words). What are the aims of the presentation? How is it trying to influence the viewer? Is it effective in this? Support your answers and remember that a critique assesses both good and bad elements, thus it should not be a position statement for or against the presentation.

## **Coordinate Questions**

View the following coordinates and try to identify the type of agriculture being practiced based on the regional location and Whittlesey's definitions.

40 N, 87.8 W [East central Illinois, probably corn]

47.25 N, 105.15 W [Eastern Montana, probably winter wheat]

38 N, 121.145 W [Orchards in California's Central Valley]

38.46 N, 122.32 W [Vineyards in California]

36.32 N, 100.65 W [Industrial meat production in North Texas]

35.85 N, 102.47 W [Feed lot and irrigated agriculture in North Texas]

41 N, 65.7 E [Pastoral nomadism in Uzbekistan]

10.4 N, 106.6 E [Intensive subsistence, wet rice dominant in South Vietnam]

40.5 N, 110.4 E [Intensive subsistence, wet rice not dominant in northern China]

51.6 N, 5.5 E [Mixed crop and livestock and/or truck farming, Netherlands]

10.05 N, 84.243 W [Coffee plantation in Costa Rica]

## **Resources**

### **Aquaculture**

Covered in the text on page 337, aquaculture is a growing and sometimes controversial source of the world's protein. NOAA's Fisheries Service hosts an informative site on aquaculture in the U.S.. Their media site is at <http://aquaculture.noaa.gov/>.

## **United States Department of Agriculture**

The USDA has extensive resources online, from environmental issues to rural development. Their main portal is at <http://www.usda.gov/>.

### **Farm Subsidy Database**

The Environmental Working Group's Farm Subsidy Database, online at <http://www.ewg.org/farm/>, provides resources and references to farm subsidies in every U.S. state as well as summary statistics. A revealing look at how much U.S. taxpayers pay indirectly for their food to be inexpensive in the supermarket.

### **Office of the United States Trade Representative**

The Office of the U.S. Trade Representative serves as a bulldog for American trade policy. This website promotes U.S. trade policy, defending everything from the North American Free Trade Agreement to development through trade: <http://www.ustr.gov/>. This site is also relevant to Chapters 10-12.

## **Connections between Chapters**

### **Back to Chapters 4 and 9**

A number of food items that are consumed in popular culture (Chapter 4) are produced in plantations. This is fertile ground for a discussion on the role of popular fads, development, and the agricultural sector in relation to international trade. For example, consider coffee, bananas, shrimp, or out-of-season asparagus and apples—all are imported to North America.

Chapter 9 introduces the concept of measuring development by measuring the percentage of people working in each sector of the economy. Review this concept upon finishing Chapter 10.

### **Forward to Chapter 11**

The connections between chapters 10-12 are more obvious as they involve the three sectors of the economy. Agribusiness represents clear connections between agriculture, industry, and services. The fact that subsistence farmers are not connected with the rest of the economy is a critical component of development for LDCs.

### **Forward to Chapter 14**

The discussion of agricultural sustainability (pp. 331-333) is at the heart of environmental and resource issues. If we can't farm in a manner which leaves the land for future generations, how can we hope to maintain resources that are less intrinsically renewable?