Food for Thought: The Globalization of Agriculture

ACTIVITY 1: AGRICULTURAL LANDSCAPES AND PRODUCTION METHODS

If you have driven around North America, you are probably accustomed to seeing cows or wheat or vegetables produced in a particular way, and you could form the mistaken impression that it is the only way to produce them. In fact, we think you’ll be much surprised at the many different ways that the same product is grown or raised in different places. In this activity, you will match strikingly different photographs of agricultural landscapes for the same crops to some of the key geographical terms you learned in this chapter. Then, once you have categorized the landscapes, you will match the photos to different regions of the world with the help of thematic map layers for various physical and human factors. If you get a wrong answer, don’t worry; the CD will steer you in the right direction!

A. To start your activity, log onto the Human Geography in Action Web site or insert your CD into your computer.

B. Select this chapter from the drop-down list, and then click on Computerized Chapter Activities.

C. Click on Activity 1: Agricultural Landscapes and Production Methods.

D. In the right margin you will see your choices of livestock and agriculture. Click on Cattle to begin.

E. You will see several photographs of different methods of raising cattle from around the world, each with a different label. Above that you will see text that describes one of the methods using the key terms from the Introduction. Match the written description to the correct photo by clicking on the photo. If your answer is wrong, the computer will give you feedback on why it is wrong; read it and click Try Again. If your answer is correct, read the description of this landscape and production method, and then click Continue.

F. When you have successfully matched all of the cattle-raising landscape descriptions to the proper photo, the screen will automatically change to a world map.

On the map you will see highlighted several regions that specialize in cattle, with a star showing the location where the photo was taken. The regions are darker in the center and lighter-colored around the edges to indicate a “core region” (see Chapter 2) where this type of agriculture is commonplace and a “fringe region” where it is also found but is not necessarily dominant. (Note: In some cases, the photo was taken in the fringe.) It is important to recognize that these regions are not the only areas on earth where these crops are grown with these methods. The colors simply delimit a region around where each photo was taken; they do not
show all similar places around the world. For instance, cattle are grazed on the open range not only in the region shown but also in Australia and Argentina.

G. Your task is to match the photos to the regions and report several characteristics about the regions. Several thematic maps can be layered on the world maps. Click on Population to see a dot map of population density. Click on Mountains to see the mountainous areas of the world. Click on Climate to see the climate regions of the world. Click on Precipitation to see a map of rainfall plus the rain-equivalent amount of snowfall. Click on Agriculture to see a division of the world into broadly homogeneous agricultural regions. Click on Development to see the World Bank's grouping of countries into low-, lower-middle-, upper-middle-, and high-income countries. Click on Subsistence to see regions of primarily subsistence livelihoods (keeping in mind that many other areas practice a mix of subsistence and commercial agriculture). These are some of the leading factors under which traditional and modern agricultural systems have evolved. You can use these overlay maps as clues to figuring out where each photo was taken, and you will have to record certain data from these maps for each location. Click on Photo Location to return to the map of the crop in question.

H. If you wish, you can click Enlarge Maps to bring up a larger window. Close the larger map window with the "X" in the upper right window to return to the main map page.

I. Click on the star where you think this photograph was taken. If you get a wrong answer, use the computer's feedback and the thematic map overlays to guide you to a better answer. (We can’t stop you from using trial and error, but we simply point out that random guessing won’t help you prepare for the inevitable exam!) When you choose correctly, answer the following questions for that location, and then click the forward arrow. You can always click the back arrow to return to a previous photo.

1.1. After you successfully match the photo to a region, you are asked to record the photo location and a value for one of the thematic layers at that location. For cattle, you are asked about population. The population map is a dot map, so you’ll have to do your best to estimate the density as “dense,” “medium,” or “sparse.”

► CATTLE

A capital-intensive, commercial, intensive land use system in which cattle are raised in feedlots with automatic feeding, watering, and ventilation systems.

Location: ___________________________

Population: ______________________________

An extensive commercial system in which cattle are raised on the open range using natural grasslands as pasture.

Location: ___________________________

Population: ______________________________

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An extensive subsistence system in arid regions in which cattle are herded nomadically among different locations of water and natural pastures.

Location: ______________________________
Population: ______________________________

An extensive commercial system in humid tropical regions in which settlers clear patches of rain forest, plant grass, and graze cattle.

Location: ______________________________
Population: ______________________________

J. After you have located all photos for cattle, the program automatically moves on to the next agricultural product. Complete the same steps and answer the questions for the other products. You can return to any product by clicking on its name in the right margin (Cattle, Wheat, Rice, Bananas, Vegetables, Seafood, Hogs). When asked to record a value from thematic map layers, check the map legend. Record your answers as before.

**WHEAT**

A capital-intensive, commercial, extensive production system for growing and harvesting wheat.

Location: ______________________________
Precipitation per year: ______________________________

A capital-intensive, commercial, extensive system for irrigating wheat fields.

Location: ______________________________
Precipitation per year: ______________________________

A labor-intensive subsistence/commercial system for growing and harvesting wheat.

Location: ______________________________
Precipitation per year: ______________________________

A labor-intensive subsistence system for irrigating wheat fields.

Location: ______________________________
Precipitation per year: ______________________________

**RICE**

A labor-intensive, subsistence/commercial, intensive land use system in which rice is cultivated in rice paddy fields on flat land.

Location: ______________________________
Development level: ______________________________

A labor-intensive, subsistence/commercial, intensive land use system in which rice is cultivated in terraced hillside rice paddies.

Location: ______________________________
Development level: ______________________________
A capital-intensive, commercial, extensive land use system for cultivating and harvesting rice.

Location: ______________________________
Development level: ______________________________

A somewhat capital-intensive, commercial, highly intensive land use system for cultivating and harvesting rice.

Location: ______________________________
Development level: ______________________________

A labor-intensive, extensive, subsistence system in humid tropical regions in which settlers slash and burn patches of rain forest and plant rice.

Location: ______________________________
Development level: ______________________________

**BANANAS**

A labor-intensive, commercial, intensive land use system in which bananas are grown in corporate plantations.

Location: ______________________________
Climate: ______________________________

A subsistence system in which banana trees are grown in villages as supplemental food sources.

Location: ______________________________
Climate: ______________________________

A capital-intensive commercial system in which bananas are grown in geothermally heated greenhouses.

Location: ______________________________
Climate: ______________________________

**VEGETABLES**

A commercial, intensive land use system in which seasonal vegetables are grown on “truck farms” for nearby cities.

Location: ______________________________
Agriculture: ______________________________

A capital-intensive, commercial, intensive land use system in which vegetables are cultivated hydroponically in soilless containers in greenhouses.

Location: ______________________________
Agriculture: ______________________________

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A large-scale, labor-intensive, commercial, intensive land use system for cultivating and harvesting vegetables using migrant workers.

Location: ___________________________
Agriculture: ____________________________

A labor-intensive, subsistence/commercial, intensive land use system for vegetables in small, backyard, urban plots.

Location: ______________________________
Agriculture: ____________________________

A labor-intensive, subsistence, intensive land use system for growing vegetables in desert oases.

Location: ______________________________
Agriculture: ____________________________

► SEAFOOD

A capital-intensive commercial system in which fish are caught in a trawl net, processed, and frozen aboard a “factory ship.”

Location: ______________________________
Development level: ______________________________

A capital-intensive commercial aquaculture system in which fish are raised in tanks.

Location: ______________________________
Development level: ______________________________

A commercial system in which a moderate amount of capital and labor are used to catch lobsters in traps using medium-sized boats.

Location: ______________________________
Development level: ______________________________

A labor-intensive subsistence/commercial system in which fish are caught in small canoes.

Location: ______________________________
Development level: ______________________________

► HOGS

A capital-intensive, large-scale, commercial, intensive land use, agribusiness system in which hogs are raised in feedlots with mechanized feeding, watering, and ventilation systems.

Location: ______________________________
Subsistence: ____________________________

An extensive subsistence system of hunting wild boars.

Location: ______________________________
Subsistence: ____________________________
A subsistence production system in which village food waste is fed to domesticated “free-range” hogs.
Location: ____________________________
Subsistence: _______________________

A medium-scale, commercial, mixed production system in which family farmers grow corn and use some of it to feed hogs.
Location: ____________________________
Subsistence: _______________________

1.2. By now you may have noticed several common themes across the different agricultural products. List three examples of agricultural production systems that share some of the same characteristics. Fill in the blanks for the product and the location:

a. Labor-intensive agricultural systems:
   production in ____________________________
   production in ____________________________
   production in ____________________________

b. Capital-intensive agricultural systems:
   production in ____________________________
   production in ____________________________
   production in ____________________________

c. Intensive agricultural systems:
   production in ____________________________
   production in ____________________________
   production in ____________________________

d. Extensive agricultural systems:
   production in ____________________________
   production in ____________________________
   production in ____________________________

e. Commercial agricultural systems:
   production in ____________________________
   production in ____________________________
   production in ____________________________

f. Subsistence agricultural systems:
   production in ____________________________
   production in ____________________________
   production in ____________________________
g. Irrigated agricultural systems:

production in ____________________________

production in ____________________________

production in ____________________________

K. When you have finished the activity, proceed to Activity 3, exit from the CD, or log out from the Web page. Don’t forget your CD if you are using one.
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ACTIVITY 2: GLOBAL SOURCES FOR YOUR LOCAL SUPERMARKET

Hundreds of years ago, the vast majority of people ate the food they grew, gathered, or bought from themselves or bartered with others in the community. In many places, especially in LDCs, this is still true today, but our food increasingly comes from faraway places. Don’t take our word for it, however—go see for yourself.

In Activity 2, we ask you to do a little field research while shopping at your local supermarket, and while we’re at it, we just might get you to try a new taste! Your assignment is to browse the aisles and look for products that were imported from a country other than the United States or Canada.

Some foods are imported because the environmental conditions to grow them do not exist in the United States and especially Canada. Others, however, are imported for economic or cultural reasons. Furthermore, in the past only nonperishable, packaged food products were imported because perishable products could not survive lengthy journeys. Today, however, inexpensive and fast long-distance transportation delivers perishable foods to your supermarket while they are still relatively fresh. For this reason, we ask you to find both perishable and packaged imports, some of which have domestic competitors (produced in the United States or Canada) and some of which don’t.

Important: Questions 2.1 and 2.2 involve a task to be done at your local supermarket, such as browsing the aisles recording data (2.1) and making a purchase (2.2). Make sure that you have dealt with these questions before you leave the market. Questions 2.3 and 2.4 can be answered at home.

2.1. In the following table, list four perishable food products and four packaged food products that were imported from countries other than the United States and Canada. Perishable products include fruit, vegetables, baked goods, meats, and dairy products. Packaged goods are boxed, bagged, canned, bottled, and contained in any other long-term packaging. Record brand names if any are given, as well as the name of the importer, if it is different. Also give the name of a similar domestic product if it is available and the comparable unit prices (per ounce, liter, pound, or kilogram).
## Chapter 8. Food for Thought: The Globalization of Agriculture

<table>
<thead>
<tr>
<th>Product</th>
<th>Imported Product</th>
<th>Domestic Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Country of Origin</td>
<td>Brand Name (if any)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brand Name (if any)</td>
</tr>
<tr>
<td>Perishable Product (4)</td>
<td>1.</td>
<td></td>
</tr>
<tr>
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<td>2.</td>
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<tr>
<td></td>
<td>3.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>Nonperishable Product (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.</td>
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<td></td>
<td>3.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>

2.2. Purchase one perishable imported item and one nonperishable imported item and tape their labels in the space below to verify your selection.
2.3. For the imported products that have domestic competitors, speculate why people would buy the imported version over the domestic version. Use any clues that you can find (price, label, advertising, season, or quality).

2.4. For the imported products that do not have domestic competitors, speculate as to why they do not.
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**ACTIVITY 3: REMOTE SENSING AND AGRICULTURAL LAND USE CHANGE**

Activity 3 involves using satellite images to determine land use change in three areas of Latin America (Figure 8.9). You will look at earlier and later satellite images for each area, and you’ll measure changes between the two years that occurred during the globalization of agriculture.

A. To start your activity, log onto the *Human Geography in Action* Web site or insert your CD into your computer.

B. Select this chapter from the drop-down list, and then click on *Computerized Chapter Activities*.

C. Click on *Activity 3: Remote Sensing and Agricultural Land Use Change*.
The first scene is an area in Sonora, Mexico, where desert has been converted into irrigated agriculture. Irrigating the desert was begun at the end of the nineteenth century by U.S. investors. After the Mexican government completed large dams in the 1940s and 1950s, irrigated agriculture rapidly filled the desert areas on the lower deltas of rivers that flow out of the mountains. This process continued throughout the late twentieth century. Now canals bring water to fields throughout coastal areas. Agribusiness is a huge industry here, with crops such as wheat, cotton, and vegetables grown for the Mexican and global markets.

D. You initially will see a satellite image from April 12, 1973. Below the image is an interpretation of the land cover you see.

E. Click on 2000 Scene, and the screen changes to an image of the same place from April 6, 2000. Toggle back and forth between the two dates and look for areas that change. Note that when the later scene appears, you have the option to view this date in “natural color,” which could help you to interpret the image (natural color is not available in the early scene because what we see as blue light was not collected by the sensor).

F. Click on Split Screen to view the images side by side.

G. Return to Full Scene and click Photos on the Ground to see photographs and interpretive text of that area.

3.1. What were the major land uses in 2000?

H. After you have become familiar with what you are looking at, select any of the four buttons that represent categories of change. Look closely at all four land use change classes in Full Screen mode. Select the 1973 or 2000 scene to redraw the image without the change category on, and then toggle the land use Change Classes on and off.

I. With any land use change class turned on, click on the Calculate Area tool. The total number of square kilometers for that type of change is listed for you. The GIS simply finds all pixels in that change class and counts them and then calculates the total area of change based on the known pixel resolution.
3.2. Which of the four types of change affected the most land? ________________
How many square kilometers were affected? ________________

3.3. For the answer to Question 3.2, describe the spatial pattern (if any) of where the change took place.

3.4. Fill in the following table, describing how this change affected people and their environment in both Mexico and the United States and Canada. Identify the positive and negative effects (the winners and losers) in both regions.

<table>
<thead>
<tr>
<th></th>
<th>Positive Effects</th>
<th>Negative Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the United States and Canada</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.5. Rank the remaining three classes of change in decreasing order of importance, and briefly explain what is occurring in each class.

a. Second-most-important change:


b. Third-most-important change:

c. Fourth-most-important change:

J. Click on Guanajuato, Mexico, in the lower right margin. The second scene is in central Mexico in the states of Guanajuato and Querétaro. This area of central Mexico is called the Bajío, a rich agricultural area worked by Native Americans for centuries. Traditional peasant agriculture consisted of small plots where people grew a mixture of crops for market and subsistence. The staple crops traditionally have been corn (maize), beans, squash, and chiles. Today, much of this is changing as Mexico produces export crops such as broccoli, cauliflower, lettuce, and strawberries for the U.S. market. Production is now more mechanized, with fewer traditional mixed-crop fields and more monoculture. Just as farmers in the United States do, small farmers in Mexico are selling out to agribusiness corporations that have better access to capital, technology, and global markets and can take advantage of economies of scale.

You will initially see a scene from March 28, 1976. Repeat the steps you did for the Sonora image so that you become familiar with this area. Note that the second image date is March 20, 2000.

3.6. What were the major land uses in 2000?
3.7. Which of the four types of change affected the most land? ______________
How many square kilometers were affected? ______________

3.8. For the answer to Question 3.7, describe the spatial pattern (if any) of where the change took place (note the presence of mountains to the north, south, and east of the photo, where it would be very difficult to farm).

3.9. Fill in the following table describing how this change has affected people and their environment in both Mexico and the United States and Canada. Identify the positive and negative effects (the winners and losers) in both regions.

<table>
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</thead>
<tbody>
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<tr>
<td>In the United States and Canada</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.10. Rank the remaining three classes of change in decreasing order of importance, and briefly explain what is occurring in each class:

a. Second-most-important change:

b. Third-most-important change:

c. Fourth-most-important change:

K. Click on Amazon Region, Ecuador, in the lower right margin. The third and final scene is from the Amazon rain forest in eastern Ecuador, where much deforestation has occurred since the 1970s. Initial development was for oil, but settlers followed using the roads built by the oil companies. The types of satellite images used in these scenes did not allow us to distinguish among different post-deforestation land uses, but studies of the region have shown that about 70 percent of the deforested area is ranch land for grazing cattle. Of the other 30 percent, some is for crops such as oil palm. Most of the farms are not sustainable because of the infertile rain-forest soils and will be converted to ranch land later unless the landowners have the money to invest in heavy applications of fertilizer.

The initial scene is of the Amazon rain forest in eastern Ecuador in 1986. You should look at the later scene from 1996, photos on the ground, and experiment with split and full screen just as you did with the previous two images.

L. For this area, we have given you three buttons that show deforested areas (for 1977, 1986, and 1996), and two buttons that show change in the deforested areas, from 1977 to 1996 and from 1986 to 1996. Also included are two other GIS layers showing Roads and Oil Wells that you can turn on and off for reference.

3.11. What were the major land uses in 1996?
3.12. What was the total deforested area in 1977? ______________

3.13. How many square kilometers of rain forest were cleared between 1977 and 1996? ______________

3.14. How many square kilometers of rain forest were cleared between 1986 and 1996? ______________

M. Turn on the Change Class for deforestation between 1977 and 1996. Click on the Oil Wells and Roads links to turn these layers on and off.

3.15. Describe the spatial pattern (if any) of where the change took place. In particular, does most of the land appear to have been cleared for oil-well construction or for other land uses? Are there many areas cleared that are far away from roads and rivers, and if not, why not?
3.16. Fill in the following table describing how this change affected people and their environment in both Ecuador and the United States and Canada. Identify the positive and negative effects (the winners and losers) in both regions.

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N. When you have finished the activity, exit from the CD or log out from the Web page. Don’t forget your CD if you are using one.