**Unit 5- Agricultural Geography**

**Key Terms**

Organic Agriculture Primary Economic Activity

Sustainable Agriculture Desertification

Plant Domestication Subsistence Agriculture

Shifting Cultivation Slash-and-Burn Agriculture

Genetically Modified Organisms Rectangular Survey System

Metes and Bounds System Long-lot Survey System

Primogeniture Monoculture

Climatic Regions Plantation Agriculture

Cash Crops Luxury Crops

Agribusiness Food Desert

**Key Concepts**

Types of Agriculture- Commercial, Subsistence, Intensive, Extensive, Shifting Cultivation, Pastoral Nomadism, Dairy Farming, Plantation Farming, Truck Farming, Mixed Use

Von Thunen’s Model

First, Second & Third Agricultural Revolutions

Enclosure Movement in England

Sauer’s Agricultural Hearths and Koppen’s Climatic Classification System

Ester Boserup’s Thesis

Clustered, Linear, and Circular Rural Settlements

Green Revolution/Biotechnology

Fair Trade, Agribusiness

Genetically Modified Organisms (GMOs)

**Key Content**

**Agriculture** is the deliberate modification of Earth’s surface through cultivation of plants and rearing of animals to obtain sustenance or economic gain. Cultivate means “to care for,” and a **crop** is any plant cultivated by people.

Researchers believe that the **agricultural revolution** began circa 8,000 b.c., as the world’s population rapidly increased relative to past era’s. The domestication of plants and animals provided humans larger and more stable sources of food, allowing more people to survive.

**Agricultural Hearths** The planting of crops and domestication of animals originated in multiple hearths around the world across different eras. Hearths include Southwest Asia, East Asia, Central and South Asia, sub-Saharan Africa, and Latin America.

Around 10,000 years ago, ***barley, wheat, lentil, and olives*** were cultivated in **Southwest Asia**. Between 8,000 and 9,000 years ago, animals such as cattle, goats, pigs, and sheep were domesticated in this hearth. From this hearth, cultivation diffused west to Europe and east to Central Asia.

In **East Asia**, ***rice*** is thought to have been domesticated more than 10,000 years ago, along the Yangtze River in eastern China. ***Chickens*** are theorized to have diffused from South Asia round 4,000 years ago.

In **Central Asia**, the ***horse*** is speculated to have been domesticated, mirroring the diffusion of the Indo-European language. ***Sorghum*** was domesticated in central Africa approximately 8,000 years ago, and yams are thought to have been domesticated in this hearth even earlier.

In **Latin America**, ***beans and cotton*** are thought to have diffused from Mexico, and the ***potato*** is considered to have originated in Peru. ***Maize (corn)*** is hypothesized to have emerged from the two hearths independently, diffusing north and south.

In developing countries most people work in **subsistence agriculture**,which is the production of food primarily for consumption by the farmer’s family. Very few people in developing countries work in **commercial agriculture** which is the production of food primarily for sales off the farm.

Most humans derive most of their calories through consumption of a **cereal grain**. A cereal grain is a grass that yields grain for food and the **grain** is the seed from a cereal grass. The three leading cereal grains are ***wheat, rice, and corn (maize).*** These three grains together account for 90 percent of all grain production and more than 40 percent of all dietary energy consumed worldwide.

**Dietary Energy Needs** To maintain a moderate level of physical activity, an average individual needs to consume at least 1,844 kcal per day. Average consumption worldwide is approximately 2,902 kcal per day. People in developed countries are consuming 3,400 kcal a day. The United States has the highest consumption, 3,800 kcal per day per person. In sub-Saharan Africa average daily consumption is 2,400 kcal a day. Some people in sub-Saharan Africa are not getting enough to eat and have to spend a high percentage of their income to obtain food.

Derwent Whittlesey conceptualized **11 distinct agricultural regions**, along with areas where agriculture was not present. The five agriculture regions primarily seen in ***developing countries are intensive subsistence, wet-rice dominant; intensive subsistence, crops other than rice dominant; pastoral nomadism; shifting cultivation; and plantation.*** The six agricultural regions primarily seen in ***developed countries include mixed crop and livestock; dairying; grain; ranching; Mediterranean; and commercial gardening.***

**Pastoral Nomadism Pastoral nomadism** is a form of subsistence agriculture based on the herding of domesticated animals. Pastoral nomads live primarily in the large belt of arid and semiarid land that includes Central and Southwest Asia and North Africa. It is simply a practical way of surviving on land that receives too little rain for the cultivation of crops. Some pastoral nomads practice **transhumance**, which is seasonal migration of livestock between mountains and lowland pasture areas.

**Subsistence Agriculture in Tropical Regions Shifting Cultivation** is practiced in much of the world’s tropical, or A, climate regions, which have relatively high temperatures, and abundant rainfall. This type of agricultural activity is practiced by approximately 250 million people across 14 million square miles.

**Plantation Farming** Most plantations are located in the tropics and subtropics, particularly in Latin America, Africa, and Asia. Despite being located in developing countries, many plantations are owned or operated by Europeans or North Americans, and they produce crops intended for markets in developed countries.Among the primary crops grown on plantations are cotton, sugarcane, coffee, rubber, and tobacco.

Three-quarters of the world’s population live in developing countries, and most are fed by **intensive subsistence agriculture**. The term intensive suggests that farmers are required to work intensively to subsist on a parcel of land. Intensive subsistence farming is primarily undertaken in East, South, and Southeast Asia.

**Wet-Rice Dominant** The term **wet rice** refers to rice planted on dryland in a nursery and then moved as seedlings to a flooded field to promote growth. Intensive wet-rice farming is the dominant type of agriculture in southeastern China, East India, and much of Southeast Asia.

**Wet Rice Not Dominant** Agriculture in much of the interior of India and northeastern China is devoted to crops other than wet rice. Wheat is the most important crop, followed by barley. In addition, some crops are grown in order to be sold for cash, such as cotton, flax, hemp, and tobacco. Land is used intensively and worked primarily by human power, with the assistance of some hand implements and animals.

**Fishing** is the capture of wild fish and other seafood living in Earth’s waters. **Aquaculture**, or **aquafarming**, is the cultivation of seafood under controlled conditions. Both fishing and aquaculture are practiced in subsistence and commercial agriculture. The world’s oceans are divided into 18 major fishing regions, including seven each in the Atlantic and Pacific oceans, three in the Indian Ocean, and one in the Mediterranean. Fishing is also undertaken in lakes and rivers.

**Grain Farming** A grain is a seed from various grasses, such as wheat, corn, oats, barley, rice, millet, and others. Commercial grain agriculture is distinguished from mixed crop and livestock farming because crops on a grain farm are grown primarily for consumption by humans rather than livestock. Commercial grain farmers sell their output to manufacturers of food products, such as breakfast cereals and breads.

**Mediterranean Agriculture** exists predominantly in lands that border the Mediterranean Sea in Southern Europe, North Africa, and western Asia. Farmers in California, central Chile, the southwestern part of South Africa, and southwestern Australia also practice Mediterranean agriculture.

**Horticulture**—which is the growing of fruits, vegetables, and flowers—and tree crops form the commercial base of Mediterranean farming. The hilly landscape typically found in a Mediterranean climate encourages farmers to plant a variety of crops within one farming area. Typically, the three most important crops grown in Mediterranean agriculture are grapes, olives, and wheat. A large portion of California farmland is devoted to fruit and vegetable horticulture, which supplies a large portion of the citrus fruits, tree nuts, and deciduous fruits consumed in the United States.

**Commercial Gardening and Fruit Farming** This type of agriculture is called **truck farming**. Truck farms grow many of the fruits and vegetables that consumers in developed countries demand. Some of these fruits and vegetables are sold fresh to consumers, but most are sold to large processors for canning or freezing.

**Mixed Crop and Livestock** Mixed crop and livestock farming is the most common form of commercial agriculture in the United States west of the Appalachians and east of 98° west longitude and in much of Europe, from France to Russia.Most of the crops grown in **mixed crop and livestock farming** agriculture are fed to animals rather than consumed directly by humans.

**The Von Thünen Model** helps explain the importance of proximity to market in the choice of crops on commercial farms. In choosing an enterprise, the farmer considers two costs: the cost of the land and the cost of transporting products to market. The crops grown around cities can be identified using a concentric circle conceptualization, in the form of four rings: *(Refer to the Lecture Slideshow or the Models Review for a visual)*

* First ring. Market-oriented gardens and milk producers were located in the first ring out from the cities. These products are expensive to deliver and must reach the market quickly because they are perishable.
* Second ring. The next ring out from the cities contained wood lots, where timber was cut for construction and fuel; proximity to market is key for this commodity because of its weight.
* Third ring. The next ring was used for various crops and for pasture; the particular commodity was rotated from one year to the next.
* Fourth ring. The outermost ring was devoted exclusively to animal grazing, which requires a great deal of space.

This model assumes that all land in a study area has similar site characteristics and was of uniform quality, although von Thünen recognized that the model could vary according to topography and other distinct physical features (e.g. a river or body of water extending into a ring).

**Dairy Farming** specializes in the production of milk and other dairy products. As milk is highly perishable, dairy farms must be located closer to the market than other products. The ring surrounding a city from which milk can be supplied without spoiling is called the **milkshed**.Dairy farmers, like other commercial farmers, usually do not sell their products directly to the consumers. Instead they generally sell their milk to wholesalers, who distribute it in turn to retailers.

**Livestock Ranching** is the commercial grazing of livestock over an extensive area. Commercial ranching is conducted in several developed countries besides the United States, and increasingly in developing countries.

**Seven challenges** confront agriculture in providing more food for a growing and hungry world, while preserving and protecting Earth’s agricultural resources for the future:

* Losing agricultural land to competing uses.
* Improving the productivity of existing farmland.
* Conserving scarce resources, such as water and topsoil.
* Identifying the appropriate role in agriculture for biotechnology.
* Balancing production of food for international trade rather than for local consumption.
* Meeting the needs of people who are undernourished.
* Making greater use of organic farming.

**Desertification** In a process called **desertification**, human actions are causing land to deteriorate to a desertlike condition. This process is more precisely referred to as semiarid land degradation. Excessive crop cultivation, animal grazing, and tree felling exhaust the soil’s nutrients and hinder agriculture.

**The Green Revolution** The invention and rapid diffusion of more productive agricultural techniques during the 1970s and 1980s is called the **green revolution**. The green revolution involves two main practices: the introduction of new higher-yield seeds and the expanded use of fertilizers.

**No till Farming** leaves all of the soil undisturbed, and the entire residue of the previous year’s harvest is left untouched on the fields. **Ridge tillage** is a system of planting crops on ridge tops. Ridge tillage compares favorably with conventional farming for yields while lowering the cost of production. Ridge tillage will tend to increase organic matter, improve water holding capacity, and usually cause more earthworms. Although more labor intensive than other systems, ridge tillage is profitable on a per-acre basis.

**Genetically Modified Organisms** A **genetically modified organism** (GMO) is a living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology. A GMO combines genetic material of two or more species that would otherwise not mix in nature. In 2010, 10 percent of farmland was devoted to genetically modified crops; 77 percent of the world’s soybeans, 49 percent of cotton, and 26 percent of maize were genetically modified in 2010. GM is especially widespread in the United States. Three-fourths of the processed food that Americans consume has at least one genetically modified ingredient. Developing countries are responsible for one-half of the genetically modified food grown, while the United States is responsible for the other one-half.

**Organic Farming** 1 percent of farmland (43 million hectares) is classified as organic, according to U.N. estimates. 40 percent of the worldwide total of organic agricultural land is concentrated in Australia. Argentina accounted for 8 percent of the worldwide total, and the United States and China for 5 percent each. According to USDA economists, organic food sales grew from $3.4 billion in 1997 to an estimated $35.9 billion in 2014. In organic farming, crops are grown without application of herbicides and pesticides to control weeds. GMO seeds are not utilized.