

Exercise 3

GRADE DISTRIBUTION

7 = A
5 = B
2 = C
1 = D with option to rewrite
0 = F with option to rewrite
7 = Not submitted

Associated Images
(cultural landscape)

Select an example of a cultural/ethnic landscapes from the listed regions. Identify an iconic image from that region and discuss it.

NEXT:
My Neighborhood as a cultural region due Dec. 11.

GEOG 247 Cultural Geography

AGRICULTURE

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Agricultural Hearths

WORLD AREAS OF AGRICULTURAL INNOVATIONS

1. Upper Southeast Asian Mainland
2. Lower Southeast Asian Mainland and Malaysia
3. Eastern India and Western Myanmar
4. Southwestern Asia
5. (Northwest India-Caucasus)
6. Mesopotamian Region (Southern Mexico to Northern Venezuela)
7. North Central China (Including the Central Asian Corridor)
8. Mediterranean Basin-Classical Near Eastern Fringe
9. Western Sudan Hill Lands and their Margins
10. Andean Highlands and their Margins
11. Eastern South America (centered on Eastern Brazil)

"Agriculture" began with the domestication of plants. Plant domestication was a gradual process.

Figure 11.4 Adapted with permission from: C. O. Sauer, *Agricultural Origins and Dispersals*. New York: American Geographical Society, 1952, p. 24.

Agriculture is Invented

➤ Geographer Carl Sauer postulated that the trials and errors necessary to establish agriculture and settle in one place would occur in **lands of plenty**.

- He suggested that **Southeast and South Asia** may have been the first tropical plant domestication occurred, over 14,000 years ago.
- The **earliest form** of plant cultivation was **vegetative planting** (direct cloning from existing plants, by dividing roots and cutting stems).

Location of First Vegetative Planting

✓ Sauer believed that **vegetative planting originated in SE Asia** because its climate and topography encouraged plants suitable for dividing.

➤ **Also**, the people were **sedentary** - obtaining food primarily by fishing, not hunting and gathering.

➤ They may have been able to devote **more attention** to growing plants.

Other early hearths of vegetative planting also may have emerged independently in **West Africa** and **northwestern South America**.

The first plants domesticated in SE Asia probably included roots such as the taro and yam, and tree crops such as the banana and palm.

Vegetative Planting Hearths and Routes of Diffusion

VEGETATIVE PLANTING HEARTH


- Primary
- Secondary

VEGETATIVE PLANTING ROUTES

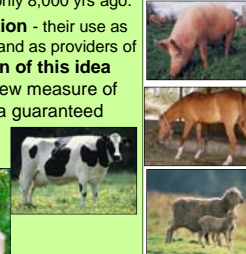
- Main dispersal route
- Early extension
- Partial penetration

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Domestication of Animals




- ❑ Animal domestication probably began earlier than plant cultivation, although some say that it began only 8,000 yrs ago.
- ❖ **Advantages of animal domestication** - their use as beasts of burden, as a source of meat, and as providers of milk - stimulated the rapid diffusion of this idea and gave the sedentary farmers a new measure of security and provided nomads with a guaranteed source of food.
- Only five domesticated mammals are important worldwide:
 - ✓ the cow, sheep, goat, pig, and horse.



Chief Centers of Domestication

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Earliest Domesticated Fauna include:

- Dog
- Sheep
- Pig
- Goat
- Cattle
- Cat
- Chicken
- Donkey
- Duck
- Horse
- Camel
- Reindeer
- Silkworm
- Honey bee

ORIGINS AND PRIMARY REGIONS OF DIVERSITY OF AGRICULTURAL CROPS

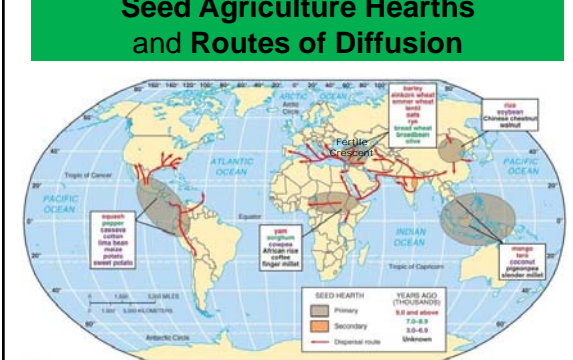
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Legend:

- ▲ Africa
- ▲ Americas
- ▲ Asia
- ▲ Australia
- ▲ Europe
- ▲ Middle East
- ▲ Oceania
- ▲ South America
- ▲ Tropical South America
- ▲ Sub-Saharan Africa
- ▲ Southeast Asia
- ▲ East Asia
- ▲ South Asia
- ▲ Pacific Region
- ▲ Central Asia
- ▲ Northern Europe
- ▲ Southern Europe
- ▲ Mediterranean Basin
- ▲ South and East Mediterranean
- ▲ West Asia
- ▲ Andean Uplands
- ▲ West Africa
- ▲ Eastern Brazil
- ▲ East Africa
- ▲ Southern and Southeastern Asia
- ▲ North Central China
- ▲ Southwest Asia
- ▲ Mesopotamia
- ▲ Mediterranean
- ▲ Meso-America
- ▲ Andean Uplands
- ▲ West Africa
- ▲ East Africa
- ▲ Southern and Southeastern Asia
- ▲ North Central China
- ▲ Southwest Asia

Seed Agriculture Hearths and Routes of Diffusion




Legend:

- Primary (9,000-8,000 years ago)
- Secondary (7,000-6,000 years ago)
- Dispersal route
- Unknown

Food Product Diffusion

The Columbian Exchange



While the original diffusion of food products took thousands of years, with the start of the **Age of Exploration** products quickly moved between continents.

The Columbian Exchange

From the Americas to Europe, Africa, and Asia:

- maize (corn)
- potatoes
- squash
- beans
- peas
- tomatoes
- chili peppers
- avocados
- pineapples
- coconut
- quinine (a medicine)


From Europe, Africa, and Asia to the Americas:

- wheat
- sugar
- bananas
- rice
- cattle
- grape (wine)
- goats
- sheep
- chickens
- strawberries
- maize
- typhus


➤ Improved communications and better shipping methods starting in the mid-20th century along with international organizations and foreign aid has allowed the diffusion of food products to varied locations around the world.

Agricultural Practice: Subsistence vs. Commercial

- Subsistence agriculture is the production of food primarily for consumption **by the farmer's family**.
- Commercial agriculture is the production of food **primarily for sale**.
 - ✓ This contrasts agriculture in less developed areas from that in more developed areas.
- ❖ Five features distinguish commercial from subsistence agriculture:
 1. Purpose of farming
 2. Percentage of farmers in the labor force
 3. Use of machinery
 4. Farm size
 5. Relationship of farming to other businesses.



Areas Where Subsistence Agriculture Predominates



There are two chief types of subsistence agriculture:

- 1. Extensive subsistence (large areas of land)**
 - Minimal labor input per acre
 - Product per land unit and population densities are low
- 2. Intensive subsistence (small land holdings)**
 - Great amounts of labor/acre
 - Yields/unit area and population densities are both high



Extensive Subsistence Agriculture

- ❖ **Shifting cultivation: farmers move from place to place in search of better land.**
 - Found in tropical and subtropical zones where historically, traditional farmers had to abandon plots of land after the soil became infertile.
- ❖ **Swidden or Slash-and-burn agriculture: use of hand tools (machetes and knives) to slash down trees and tall vegetation, and fire to burn the vegetation on the ground.**
 - A layer of ash from the fire covers the ground and contributes to the soil's fertility when mixed with rainwater.
 - Less than 3% of world's people engaged in this type of cultivation

Extensive Subsistence Agriculture



Shifting cultivation

- Plots are **cleared** and **burned**, then **cultivated** until fertility is lost, after which cropping is **shifted** to a newly prepared site
- **Highly efficient cultural adaptation** where land is abundant in relation to population and levels of technology and capital availability are low.

Swidden Plot Preparation

Liberia, West Africa



A. The vegetation is hacked down and set on fire.
B. The field is planted by hand. Stumps and unfelled trees remain in the field.

Benefits of a "Good" Burn:

1. Removal of unwanted vegetation.
2. Killing of insect, animal and weed pests.
3. Softens soil for easier penetration by small hand tools.
4. Provides a protective soil cover of wood ashes.
5. Nutrients in the ash enrich the soil and maintain soil structure.
6. Burned stumps and logs provide charcoal for cooking.



Extensive Subsistence Agriculture

- ❖ **Nomadic herding: controlled movement of livestock solely dependent on natural forage;** wandering in search of animal feed.
 - Most extensive type of land use (requires greatest amount of land area per person)
 - Nomadic movement is tied to sparse and seasonal rainfall or cold temperatures, as well as the quality and quantity of forage.
 - **Animals provide a variety of products:** food, clothing, shelter and fuel (dried dung).
- ❖ **Transhumance: the seasonal movement to exploit locally varying pasture conditions.**

The Nomadic Herding Culture

- **Herders constantly move livestock** to new grazing and water sources in response to availability and to the seasons.
- **Nomads have few personal possessions and few fixed structures.**
- ❖ **Wealth is based on size of livestock holdings.**
 - Sedentary cultivation being encouraged in some areas as governments **seek to stabilize a population in place.**






Intensive Subsistence Agriculture

Involves c.45% of world's people.

Characterized by:

- **Small-plot production of grains** (rice, wheat, maize, or millet)
 - Warm, moist areas of monsoon Asia are well-suited to rice production
 - Cooler, drier portions of Asia/Africa produce wheat, millet, upland rice.
- **Intensive use of fertilizers**, mostly animal manure but including human waste (night soil)
- **High yields in good years.**
- **Polyculture** (variety of crops) is practiced for food security/dietary custom.

Urban agriculture is a rapidly growing activity in cities.

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Intensive Agriculture

Farmers in Madagascar plant highland rice by hand in a field that was prepared by the swidden (slash and burn) method.




Figure 8.2 Environmental of The Human Biome, Second Edition © 2014 W. H. Freeman and Company

From Learning Curve 217

Intensive Agriculture

Farmers in Indonesia tending to terraced rice paddies.

Highly labor intensive form of agriculture that provides a very high return.

High temperature/high moisture annual climate allows for double cropping.
Climate also provides the large amounts of water required for this form of agriculture.



Figure 8.3 Environmental of The Human Biome, Second Edition © 2014 W. H. Freeman and Company

Dennis Waught/Tony Stone Images

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Intensive Agriculture

Sugar cane in the Philippines



Bananas in India



Corn in Kenya



Rice in Myanmar



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Urban Agriculture

❖ **The raising of food** (including fruit, vegetables, meat, and milk) **inside cities, particularly in developing nations.**

- Result of increased world urbanization (over 50% of world's people live in cities).
- Production is usually enough to feed the family with enough surplus to sell at the local market.

➢ In China urban agriculture provides 90% of vegetables consumed.


➢ In East Africa it provides 70-90% of poultry and vegetables.


China

Urban Agriculture


Fields in Havana



Vertical agriculture in Tokyo



Farming in San Francisco



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Detroit Redevelopment: Farming




Introducing Hantz Farms
Detroit is about to redefine urban growth.





Second Industrial Revolution

How did agriculture change with industrialization?




Industrialization when applied to agriculture would move it beyond subsistence to generate the food surpluses needed to feed thousands of people who are now working in factories instead of in the fields.

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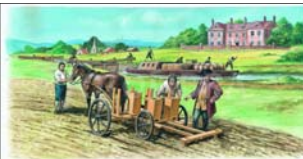


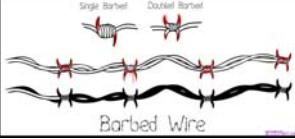
Mechanization of Agriculture

- ❖ **The replacement of human farm labor with machines.**
- ✓ **New technologies developed**, as the seed drill and horse-pulled hoe.
- ✓ **Mechanical reaper** perfected by farmer Cyrus McCormick (1831). >>>
- ✓ **Advances in breeding livestock.**
- ✓ **Great Britain's Enclosure Act:** encouraged field consolidation into large, single-owner holdings (*efficiency of scale but also changed the rural landscape*).
- **Innovations in machinery** that occurred with the Industrial Revolution in the late-1800s and early-1900s **helped sustain increased productivity while reducing farm labor.**






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Agricultural Inventions

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Large-scale Grain Farming

Widespread use of machinery encourages larger farms.

"Agribusiness instead of family farming."

Common in the United States, Canada, European Union, Argentina, Australia

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Vegetable Farming




Labor and land intensive. Susceptible to extreme weather conditions.




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Expanding Crop Production

➤ Once mechanization is in place with increased yields, **there is still a need to continue to increase food production.** WHY?

➤ World population growth: shades of Malthus re-emerging.

❖ **Two paths to increased food production:**

1. **Increase the land area under cultivation.**
2. **Boost crop yields from existing farmlands.**

➤ **Two alternatives to increased food supplies:**

1. **Identify new sources of food:** cultivate the oceans, develop higher protein cereals, improve palatability of rarely used items.
2. **Redistribute food supplies** (increase exports from surplus areas... But who pays?)

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Expand the Land Area under Cultivation

HOW? Most of the area well-suited for farming is already under cultivation (includes best/better marginal).

- **Convert marginal areas** through drainage, irrigation, fertilization, landscaping (very expensive)
- **Slow loss of millions of acres annually** because of
 - soil erosion
 - salinization through improper irrigation + sea level rise
 - desertification
 - conversion of farmland to other uses: urban, industrial and transportation

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Expand Crop Production

Two interrelated approaches to increase yield:

- a. **Increase production inputs:** Use more water, fertilizer, pesticides, herbicides, labor
- b. **Scientific experimentation:** Complex of seed and animal improvements adapted to the needs of intensive agriculture and designed to bring larger harvests from a given area of farmland, e.g., genetic improvements to plants and animals, plus better farm management techniques.

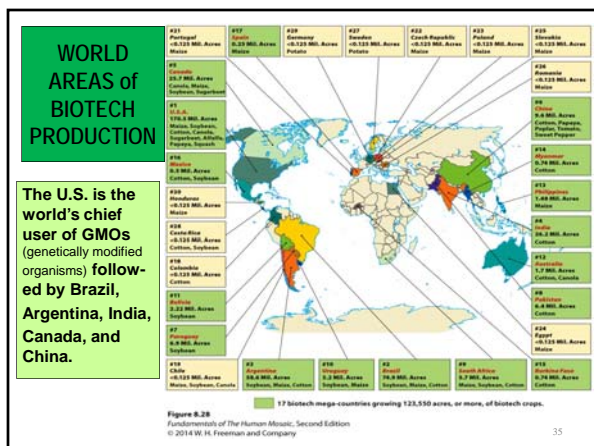
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Third Agricultural Revolution

❖ **The Green Revolution: Increased crop yields from existing farmlands was seen as the key to increasing agricultural output**

- 1930s: US agricultural scientists begin experimenting with **technologically manipulated seed varieties** to increase crop yields.
- 1960s: Focus shifted to India (IR8: quick growing high-yield rice), then to the Philippines and SE Asia.
- 1980s: Fast-growing hybrid rice (IR36) was produced that had genetic resistance against pests and diseases.
- New high-yield varieties of wheat and corn developed in the US were planted in other parts of the world, esp. in South and Southeast Asia (diffusion).

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Expand Crop Production

❖ **Green Revolution: High-input = high-yield agriculture.**

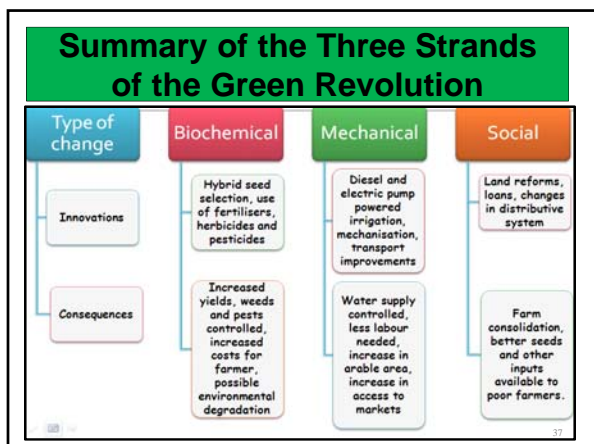
Costs for Green Revolution successes?

Commercial orientation and demands = costly inputs

- Displacement of traditional and subsistence agriculture with chemical farming
- Loss of food security and nutritional diversity (monoculture)
- Salinization of soil and ground water depletion (due to irrigation).

- Unequal spatial distribution of benefits, especially when commercialization of the product is involved.
- Gains are falling off in many geographic areas (production plateaus are being reached)
- Consumer resistance to genetically modified crops and products.

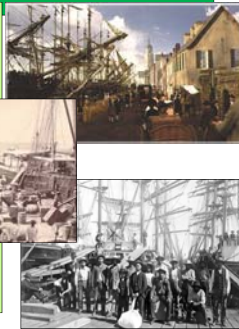
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Commercial Agriculture

❖ **COMMERCIAL AGRICULTURE:** The growing of crops and the raising of livestock specifically for sale rather than for consumption by one's own family (opposite of subsistence agriculture)

- It began in the 18th century when **Europe became a market for agricultural products** from around the world.
- Dominates the world's economic core**, as well as some of the places in developing and Third World areas.



Commercial Agriculture

It has resulted in the intensification and consolidation of agriculture including:

- Reduction in the number of farms
- Enlargement in the size of farms
- Loss of "general farms" in favor of one or two crop operations

➢ **21st Century:** Rise in the number of small farms in developed areas that fill the consumer-driven niche for **organic and local food**.

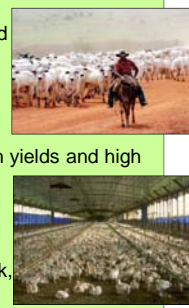
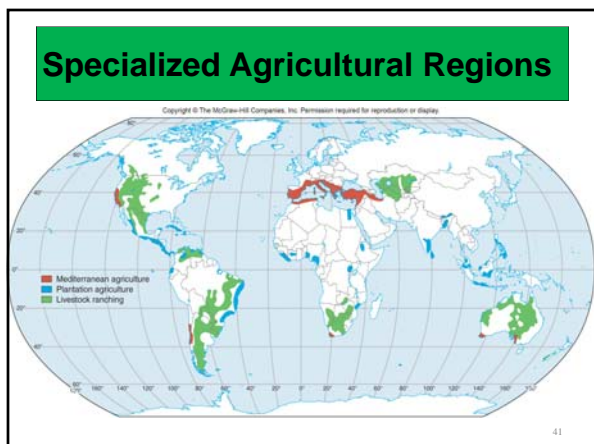
Commercial Agriculture

EXTENSIVE:

- Larger farm units on cheaper land that are farther from market
- Large-scale grain farming
- Livestock ranching >>>>>>>

INTENSIVE:

- Production of crops that give high yields and high market value per unit of land
- Truck farming (fruits/vegetables)
- Dairy farming
- Livestock-grain farming
- "Live-stock factory" farms: for milk, beef, wool, hogs, chickens >>>>





Commercial Agriculture: Special Crops

❖ **Special crops are profitably grown where natural conditions, consumer demand and transportation come together**

Circumstances make some places far from markets intensively developed farming areas

- ✓ **Mediterranean-type agriculture**
 - Grapes, oranges, figs, vegetables, olives
- ✓ **Plantation crops**
 - Large agricultural holding, frequently foreign-owned, devoted to the production of one or two export crops
 - Typically tropical, near coasts for export




Commercial Plantation Replaces Peasant Farms



- ✓ Base for European expansion into Asia, Africa and Latin America
- ✓ Subtropical –tropical areas
- ✓ One crop farming
- ✓ Capital intensive
- ✓ Workers live on plantation
- ✓ Tension between labor and management

Livestock Feeding

Animals are fattened for slaughter in feed-lots after journey from ranch or farm.




Farming the water: Fishing

Fishing is a major supplement to human food resources especially when populations are large, live in high density and agricultural land is not productive.

- About 80% of annual fish harvest consumed by humans, rest used for livestock feed or fertilizer
- Fish supply comes from
 - Inland catch (fresh water)
 - Fish farming (both fresh and salt)
 - Marine catch (open oceans, salt water inlets)
- Maximum sustainable yield exceeded in local waters in many areas of the world


Aquaculture/Mariculture



Source of protein in diets. Practiced along the coasts.

Concentrated in east and south Asia.

China is dominant in the world production of farmed seafood.



Problems facing Fishing

Commercial marine fishing

- Concentrated in the northern Atlantic and Pacific
- Uses sophisticated technology to locate and catch fish
- Overfishing of prime fishing grounds has resulted

Quality of the catch

- Pollution of freshwater areas, coastal waters and deep sea areas
- Concern about fish quality in fish farms (aquaculture)

Aquaculture (fish farming)

Commercial aquaculture is a 20th century enterprise and is the fastest growing sector of the world food economy.

- Has existed for over 4,000 years
- Means of increasing fish supply
- Virtually all farmed fish are for human consumption
- Disadvantages:
 - Pollution from fish wastes, chemicals and drugs
 - Transference of disease to wild fish stocks
 - Depletion of wild fish stock to feed farmed fish
 - Genetic damage to wild fish stock

N E X T

Agricultural Landscapes

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