Unit 5 - Agriculture, Food Production, and Rural Land Use

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Background Info:

Agriculture is an activity that makes up the primary economy.Other activities in the primary economy are timber,fisheries, and mineral and energy resources. Agriculture is connected to the demographic transition model and Third-World countries. In stage 2 of the DTM and the 3rd world agriculture is the primary mode of economic productivity.This means that agriculture is the main source of employment in the 3rd world countries and the majority of the countries' gdp comes from the sale of agricultural products

Intensive vs Extensive

Intensive Agriculture: requires lots of labor input, or is focused on a small amt of land, or both
Extensive Agriculture: requires limited labor input, or is spread across large amounts of land, or both

Pre-Agricultural society

Hunting and gathering societies were the predecessors of early forms of agriculture. The concept of transhumance is related to this. Transhumance is when groups oved seasonall not only to avoid harsh climates,but also to follow animal herds and walk to areas with fruiting native plants.

Vocab

Agriculture: the deliberate modification of Earth's surface through cultivation of plants and animals for sustenance or economic gain.
Crop: any plant cultivated by people
Hunter-gatherers: live in small groups; men hunted animals and women gathered plants

- Still exist in Australia's Great Victorian Desert, India''s Andaman Islands, Botswana, and Namibia

Agricultural Revolutions

- The **Neolithic Revolution** (around 8000 BC) is marked by plant and animal domestication
    - Environmental factors
        - End of last ice age
        - Redistribution of living things
    - Cultural factors
        - Permanent settlements
- The **Second Agricultural Revolution** started in Europe with crop rotation, the three-field system, and the introduction of new crops and technology
- **Third Agricultural Revolution**
    - **Green Revolution**: the use of hybrid seeds, improvements in management, and technology in order to increase crop yields; inventing and diffusion of better agricultural methods (ex: irrigation pumps, tractors)

Miracle WHEAT Seed	Miracle RICE Seed
Shorter, stiffer	Harder
Responds better to fertilizers	Better adapted
Less sensitive to season	More yields
Faster growth	Faster growth

    - Biotechnology is used to increase production by genetically engineering crops and livestock
        - GMOs (Genetically Modified Organisms): changing the genetic foundations of an organism to make it stronger or better for the purpose

Rural Agriculture

- **Subsistence Agriculture**: growth of crops in order to sustain oneself and family

- **Extensive Subsistence Agriculture**: involves large land plots and small amounts of labor
- **Intensive Subsistence Agriculture**: involves smaller land plots and large amounts of labor
- **Nomadic Herding**: migration to allow livestock to feed by foraging
- **Shifting Cultivation**: clearing of large plots of forest in order to farm on it

Commercial Agriculture

- **Intensive Commercial Agriculture**: farming that uses small amounts of technological and scientific input for each plot of farmland. This is generally done to grow crops which have high yields and high market demand (ex: fruit, dairy)
- **Extensive Commercial Agriculture**: large amounts of land that are not intensively worked upon (ex: wheat, livestock land)
- **Agribusiness**: farms as part of corporate units; farms produce for a specific market and are often part of a vertically integrated business; usually leads to the concentration of certain farming activities in certain regions
- **Collective farms**: cooperative farming in which producers lose their land, and join large numbers of workers in order to perform different jobs within the collective for the good of everyone
- **State farms**: government-owned farms run by employees of the state

Sustainable Agriculture

- Preserves and enhances the environment
- Sensitive land management
    - Ridge tillage: a system of planting crops; lowers production costs and is better for soil conservation
- Limited chemicals
- Better integration of mixed crop and livestock farming
- MDCs, especially Australia, account for more of the world's sustainable agriculture than LDCs

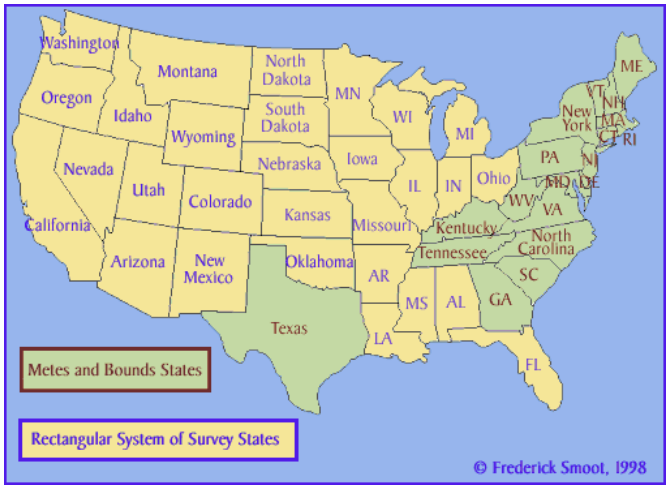
Positive effects of using chemicals	Negative effects of using chemicals
Weeds are killed with herbicides	Poorer soil quality

Insecticides and pesticides remove unwanted creatures which may ruin the crop	Poorer water quality

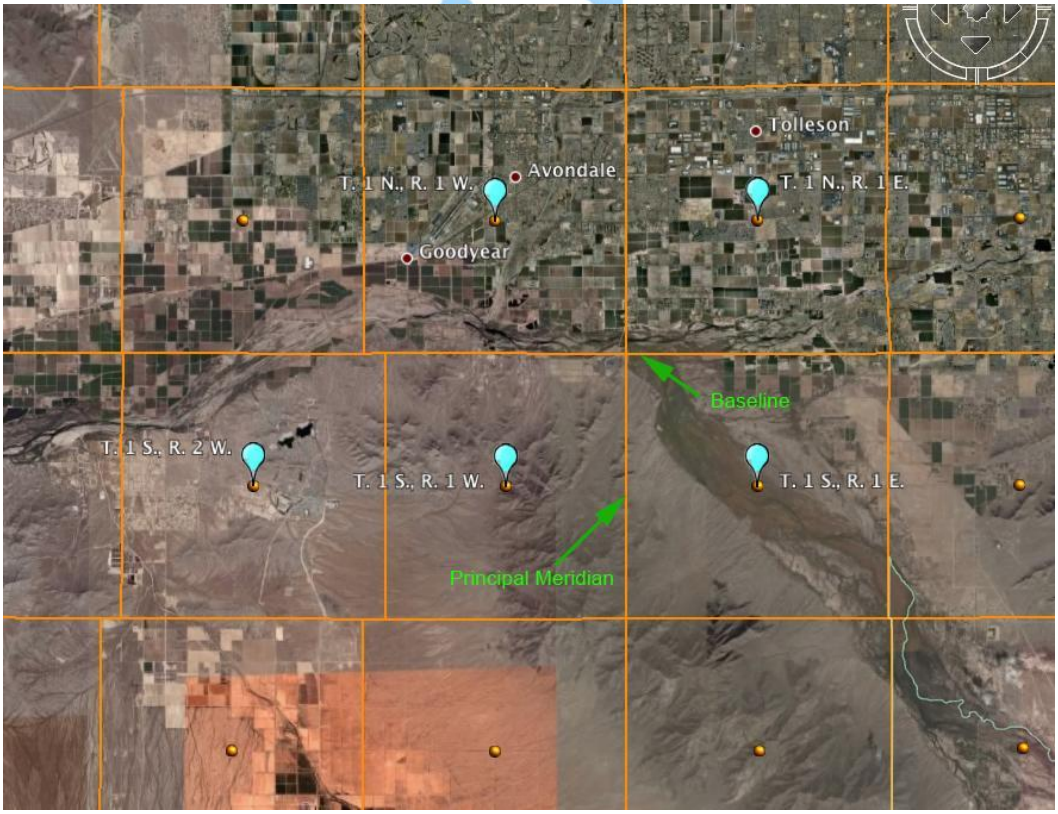
Settlement Patterns: how people have organized villages and towns in order to engage in agriculture or land survey systems

- Clustered village
- Linear or street village
- Village with commons
- Irregular village
- Checkerboard village
- **Long lots**: settlement pattern used by the French and Spanish to allow all lots access to a waterway or road

- **Metes and Bounds**: a system that makes use of natural features to set boundaries for surveying; this causes very few regular boundaries to be formed
    - This was used in the Colonial U.S.

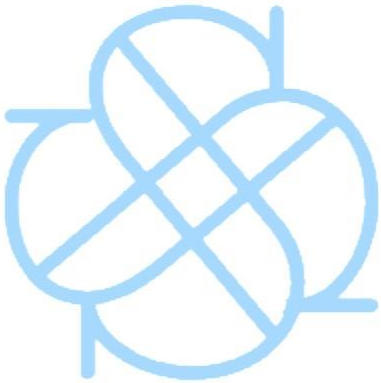


- **Township/Range System**: land survey system instituted by the United States and Canada where land was surveyed and divided up using a grid system. This provided an orderly way to divide and sell land in the US West for settlement.



Crop Hearths (origins)

- Southwest Asia
    - Barley
    - Wheat
    - Lentils
    - Olives
- East Asia
    - Rice
    - Millet
- Sub-Saharan Africa
    - Sorghum
    - Yams
    - Maybe millet
    - Maybe rice
- Mexico
    - Beans
    - Cotton
- Peru
    - Potato
    - Maize



Animal Hearths (origins)

- Southwest Asia
    - Many agricultural animals

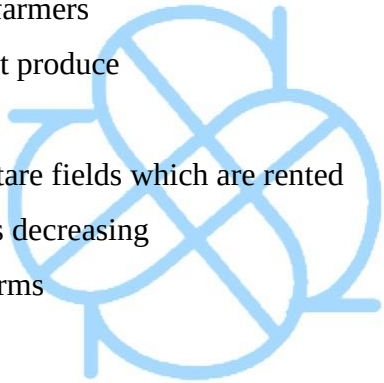
- Asia / Europe
    - Dogs
- Central Asia
    - Horses

Subsistence Agriculture: production of food for the farmer's family; mostly in developing countries

- 44% of the labor force are farmers
- Mainly hand tools and animal power
- 1 hectare average field size
- Many small farms, advancements are being made

Commercial Agriculture: in developed countries; food production for being sold for areas off the farm

- 5% of the labor force are farmers
- Railroads used to transport produce
- Tractors, machinery
- Average of about 160 hectare fields which are rented
    - Farm percentage is decreasing
- Only a handful of large farms



Consumers

Dietary energy consumption: the amount of food that an individual consumes

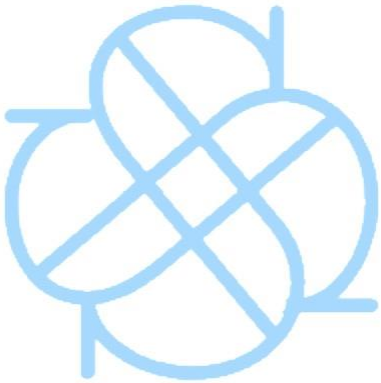
- The three leading cereal grains are wheat, rice, and maize
    - These make up 40% of all dietary energy consumption

Food security: about 80% of the world has this; the physical, social, and economic access to safe and healthy food for living a healthy life

Undernourishment: when the dietary energy consumption is continuously below the minimum requirement

- India and China have the largest percentage of undernourished people

Developing countries have much more fluctuation in undernourishment levels



Types of Agriculture

- Pastoral nomadism
    - In the dry lands of North Africa and Central/SW Asia
    - Sedentary subsistence farming: exchange of plants for animal products
    - Subsistence agriculture based on domestic animal herding
        - Camels: survive heat, carry heavy items
        - Goats: they eat almost any vegetation (easy to graze)

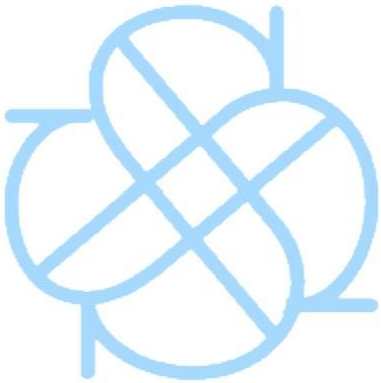
        - Sheeps: needed as food, move slow
    - Practiced in dry areas where plants can't grow
    - Transhumance: the seasonal migration of livestock between mountains and pastures (for grazing)
    - Governments force nomads to settle (trying to make them work for the economy)
- Shifting Cultivation
    - Tropical areas
    - Slash/burn an area to create a clear field
        - Grow crops on that field and leave it for nutrients to get restored
    - Swidden: the cleared area; usually used for 3 years or less
    - Potash: potassium used as a fertilizer
    - Normal crops for this are upland rice, cassava, yams, plantains, millet, sorghum, sugarcane, and some vegetables
    - This practice is being replaced by logging, cattle ranching, and cash crop cultivation
    - Cash crop: any crop grown to be sold for economic gain
    - This is an inefficient way to grow food
        - Also causes deforestation and global warming
    - However, it is also the most environmentally sound approach rather than commercial ways
    - Many people depend on this, so there lives will be disrupted if shifting cultivation is banned
- Intensive Subsistence
    - Labor is high
    - Wet rice dominant is in E Asia and S Asia
    - Non wet rice dominant is in E and S Asia where rice cannot grow (mainly wheat)
    - Sawah: flooded field
    - Europeans/North Americans call sawahs as "paddy" which is incorrect and means "wet rice" in Malay
    - Terrace farming: making basically steps on mountain sides so that wet rice can grow (it grows on flat areas)

- Double-cropping
    - Possible in wet, warm summer and dry winter
    - Planting two crops at once in the same field
- Crop rotation
    - Rotating the use of different fields from crop to crop to avoid soil exhaustion
    - Fallow: field is left to restore itself
    - Rest crop: help restore the field when planted
- Plantation
    - Tropical and subtropical climates
    - Mainly in Latin America, Asia, and Africa
    - Coconuts, sugarcane, tobacco, rubber, cotton, bananas, tea, etc.
    - Large commercial farm in a developing country that specializes in 1 or 2 crops

Developed Agriculture

- Agribusiness: system of commercial agriculture in developed countries
- Mixed Crop and Livestock farming: common in Europe and near Appalachian Mts.; basically farms have livestock and crop fields
    - Workload more distributed since crops usually don't need attention in the winter
    - Crops are planted in spring and harvested by fall
- Most land is used for the crops, but the selling of animals gives nearly 75% of the income
- Truck farming: sell crops to consumers or processors
    - Labor costs are kept low by hiring migrant workers, using machinery, and experimenting with different methods (finding best method)

- Specialty farming: truck farming method; farmers profitably grow crops of limited yet increasing demand; used in New England, for example
- Milkshed: the imaginary rings surrounding a city from which milk can be supplied without spoiling
- Milk products are often sold by developing countries since they can't transport liquid milk to far away places
    - Ex: New Zealand sells milk products since it is farther away from population clusters
- Horticulture: cultivation of fruits, vegetables, and flowers
- The Mediterranean regions have olives and grapes as the main cash crops



Ranching Stages

1. Introduction and Establishment
    a. Ranchers would get paid for the cows they provide. There were growing demands in East coast cities
2. Open Range and Cattle Drives
    a. Cowboys would herd cattle across the states. Kansas towns were the main cattle destinations. Ranchers could not own much land at all.
3. Fixed Location Ranching
    a. The government sold land areas to ranchers so that they can settle and grow the cattle in one area.

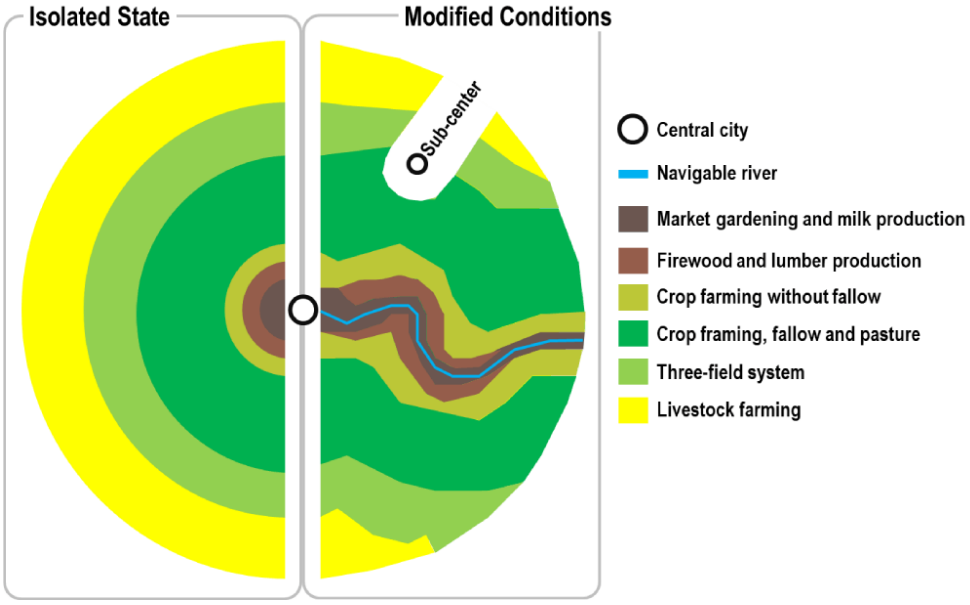
Feedlots: basically the places where the farm animals are sent to get fattened up in order to be ready as meat for consumers (usually for cattle)

Subsistence farmers increase food supply by intensification of product (making the product better and more plentiful). This is done through new farming methods like plowing and fallowing. The five basic stages of the intensification of farmland are forest fallow, bush fallow, short fallow, annual cropping, and multi cropping. This intensification occurs after shifting cultivation.

Record-high food prices are because of (according to the UN):

1. Poor weather
2. Higher demand
3. Smaller productivity growth
4. Use of crops as biofuel rather than food

Von Thunen Model shows how location of the field from a city or other physical feature affects the type of farming and crops.



The easy-to-spoil product farming, like milk farming, is closer to the city.
Animal grazing is on the outer layers since it needs a lot of space.

Increasing World Food Supply

1. Increase land area for agriculture

2. More productivity of the land
3. New fishing sources
4. Increase exports from other countries which have surpluses

Desertification: the spread of desert-like conditions; caused by HUMAN ACTIONS

Prime agricultural land: most productive farmland

Aquaculture/Aquafarming: growing and harvesting water-based plants/animals (ex: seaweed, fish)