



5.10 Consequences of Agricultural Practices

Objective and Essential Learning

Explain how agricultural practices have environmental and social consequences.

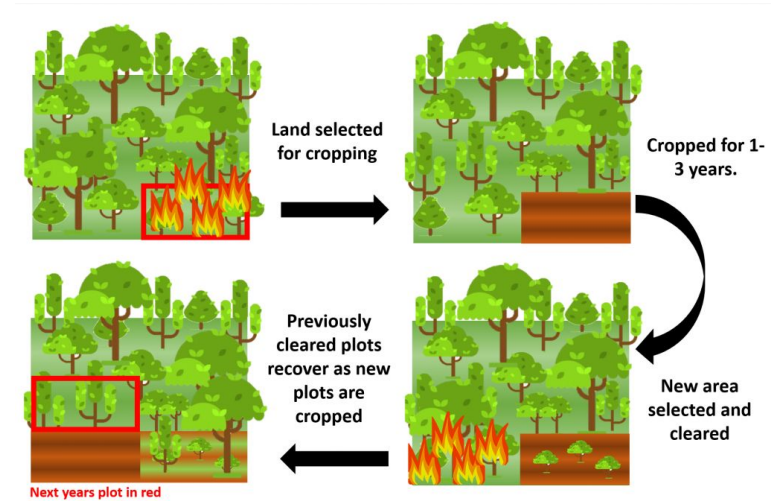
- Environmental effects of agricultural land use include pollution, land cover change, desertification, soil salinization, and conservation efforts.
- Agricultural practices- including slash and burn, terraces, irrigation, deforestation, draining wetlands, shifting cultivation, and pastoral nomadism- alter the landscape.



Agricultural Practices Alter the Landscape

Shifting Cultivation

- Practiced in periphery and semi-periphery countries - South America, Central and West Africa and Southeast Asia.
- Farmers cultivate the land until the soil becomes infertile.
 - Fallow (uncultivated) period is supposed to allow the land to recover
 - Soil degradation if land does not have an adequate fallow period.



Agricultural Practices Alter the Landscape

Slash & Burn Agriculture

- Type of shifting cultivation that permanently alters the landscape.
 - Method: Cutting and burning forests in order to create fields for cultivation.
 - Ash from burning provides nutrients and fertilizes crops.
- Results in deforestation and soil erosion
 - Half of the world's topsoil has been lost in the past 150 years.



Agricultural Practices Alter the Landscape

Terrace Farming

- Typically practiced by subsistence farmers in mountainous areas.
- Steps are built into the sides of hills and mountain sides in order to cultivate water-intensive crops like rice.
 - During rainfall, the water floods through the steps without pulling out the plants or causing soil erosion.
- Allows land to be cultivated that would otherwise be non-arable.



Agricultural Practices Alter the Landscape

Irrigation

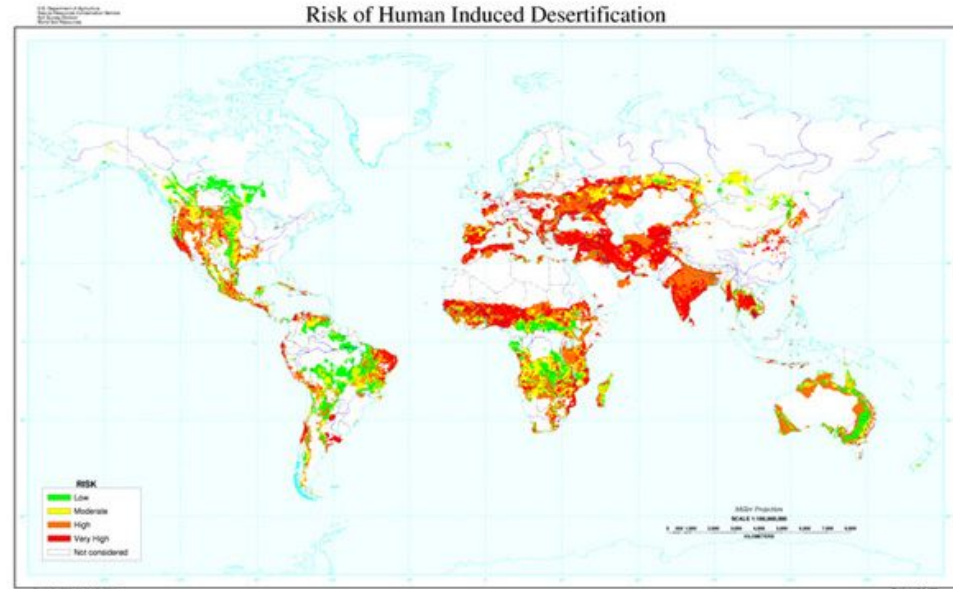
- Used to supplement rainfall by bringing water from its natural sources to farm fields through systems of canals, ditches, and other methods.
 - Reservoirs and aquifers
- Impacts the cultural landscape and results in depletion of water resources.



Agricultural Practices Alter the Landscape

Pastoral Nomadism

- Practiced in semi-arid and arid climates, subsistence farming.
- Herders move animals seasonally to graze
- Results in soil erosion & desertification
 - Process by which formerly fertile lands become infertile.
 - Typically as a result of droughts and overgrazing



Agricultural Practices Alter the Landscape

Draining Wetlands



- Wetland: Area of land that is covered by water. Swamps, marshes & bogs.
- Drained & converted to arable, farmland.
 - In the Netherlands, 17% of the countries total land area was reclaimed for farming and habitation.
- Results in loss of biodiversity and other environmental issues
 - Loss of habitat for fish, waterfowl, and mammals.
 - Increases storm and flood damage





In the Netherlands the creation of dikes (A dike is a barrier used to regulate or hold back water) and polders (the term used to describe any piece of land reclaimed from water). Once dikes were built, canals and pumps were used to drain the land and to keep it dry.

From the 1200s, windmills were used to pump excess water off the fertile soil, and windmills became an icon of the country. Today, however, most of the windmills have been replaced with electricity- and diesel-driven pumps.

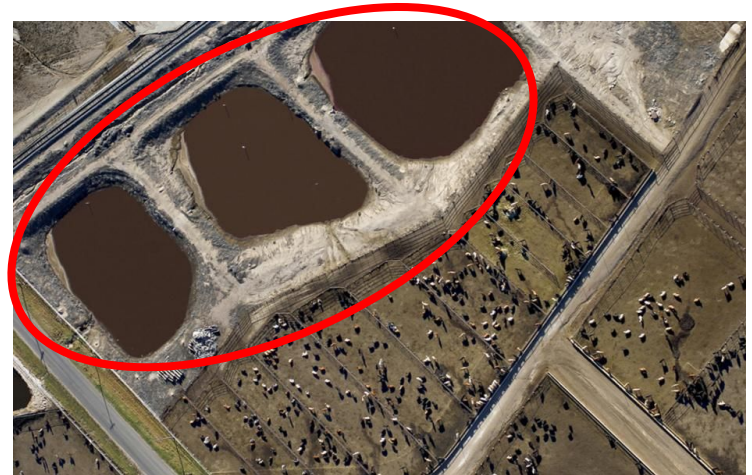


Humans modify the physical environment to suit their needs and this shapes the cultural landscape.

Environmental Effects of Agriculture

Pollution

- Increase in the demand for meat -> increased animal waste -> Can contain bacteria and nitrates which can contaminate water sources, soil and cause illness.
- Pesticide and herbicide -> chemicals into the air, soil, and water -> runoff contaminates water sources and damages wildlife habitats.
- Use of fossil fuels increase greenhouse gases that contribute to climate change.



Environmental Effects of Agriculture

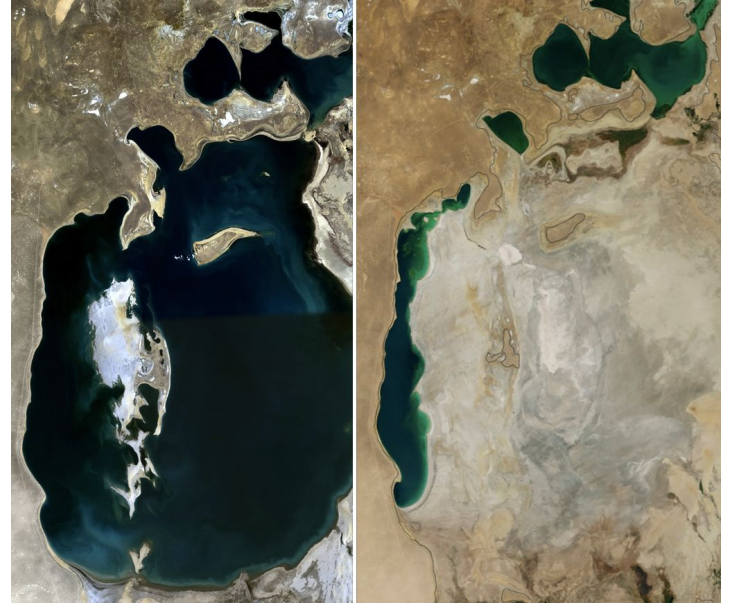
Soil Salinization

- The process by which salts build up in the soil when water evaporates from the ground more rapidly than it is replenished.
- Salt interferes with the ability of plants to absorb water and strips nutrients from the soil.
- Rapidly increasing as more land comes under irrigation and wetlands are drained.



Environmental Effects of Agriculture

- Example: The Aral Sea in Central Asia
 - Rivers were diverted in the 1960s to irrigate the desert regions for cotton production.
 - Water levels declined, soil became salinized (became salty) and fish died.
 - Changed the cultural landscape, impacted the fishing economy.

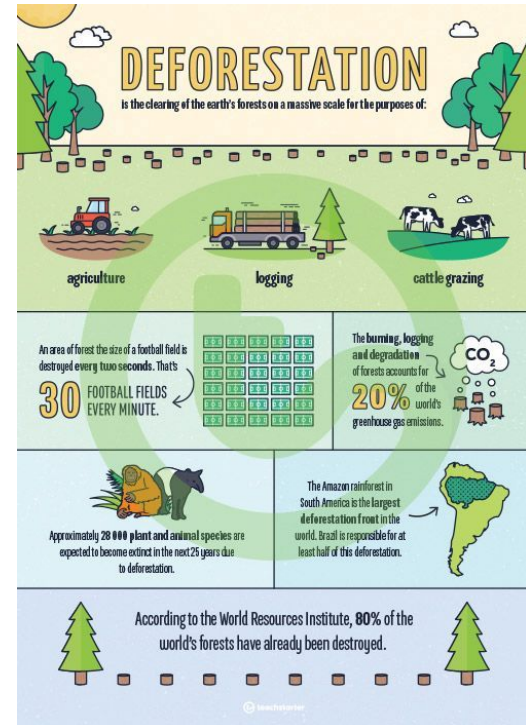


AS OF 2019, THE ARAL SEA IS 1/10 OF
ITS ORIGINAL SIZE

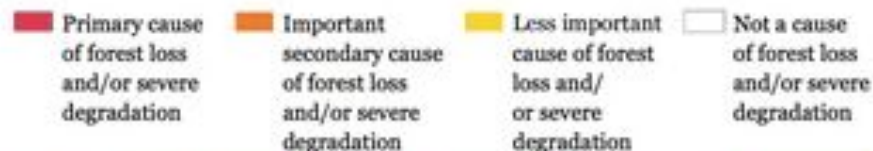
Environmental Effects of Agriculture

Deforestation

- Tropical rainforests -> Amazon, and rainforests in Indonesia and Malaysia.
- Rising demand for has led to the conversion of forests:
 - Logging Industry
 - Slash and burn subsistence farming
 - Cattle Grazing
 - Commercial Agriculture - Palm Oil
- Results in increased greenhouse gas emissions, soil erosion, loss of biodiversity



DEFORESTATION PRESSURE













	 Livestock	 Large-scale agriculture	 Small-scale agriculture & colonization	 Unsustainable logging	 Pulp plantations	 Fires	 Charcoal and fuelwood	 Mining	 Infrastructure	 Hydroelectric power
Amazon	■	■	■	■		■		■	■	■
Atlantic Forest/ Gran Chaco	■	■		■	■	■	■	■	■	■
Borneo		■	■	■	■	■		■	■	■
Cerrado	■	■					■	■	■	■
Chocó-Barién	■	■	■	■			■	■	■	
Congo Basin	■	■	■	■			■	■	■	
East Africa	■	■	■	■		■	■	■	■	
Eastern Australia	■		■	■				■		
Greater Mekong		■	■	■	■		■		■	■
New Guinea		■	■	■	■	■				
Sumatra		■	■	■	■	■			■	

Table 2: Summary of main pressures on forests in different deforestation fronts



Increases to agricultural production have significantly impacted the environment.

Objective and Essential Learning

Explain how agricultural practices have environmental and social consequences.

- Environmental effects of agricultural land use include pollution, land cover change, desertification, soil salinization, and conservation efforts.
- Agricultural practices- including slash and burn, terraces, irrigation, deforestation, draining wetlands, shifting cultivation, and pastoral nomadism- alter the landscape.
- Societal effects of agricultural practices include changing diets, role of women in agricultural production, and economic purpose.

