

POGIL 3.3.1 Food resources - Impacts

Review

***Read Chapter 3.3.1 of the E-text and then complete this part of the POGIL worksheet.*

***Please fill out worksheet in a different font or text color (green or blue) so it is easy to distinguish your answer from the questions.*

EQ1. What foods define you and your family? Where are these foods grown and/or produced?

This is up to you, context specific.

EQ2. What process in the carbon cycle produces our food?

Photosynthesis!

IQ3. Where did the carbon in our food come from?

The atmosphere!

AQ4. Ultimately, where did the tree's mass originally come from? (Hint: think back to the process of photosynthesis.) Circle the correct answer.

Soil Water Air

EQ5. What is required for plant growth?

Water, sunlight, nutrients

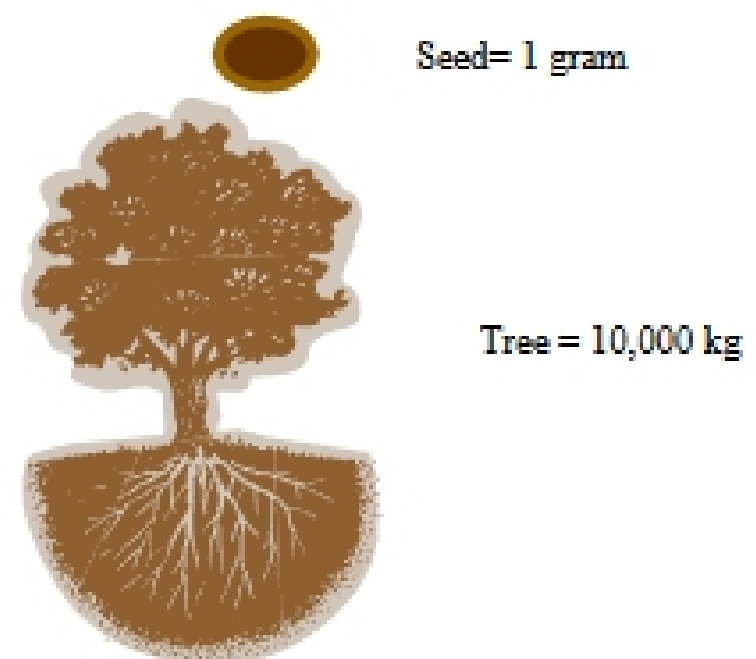
EQ6. What is required to "grow" meat?

Water, sunlight and nutrients to grow the plants which feed the animals. Plus lots of water and land!

IQ7. Think about a box of cereal that you buy at the grocery store. Who are the potential entities (people, corporations etc.) receiving the money that you spend for that cereal? Try to list these entities in order of the amount of money they will receive from your purchase, from greatest to least.

Depends on who you put on this list: but here is are some ideas

Corporations < -- Farmer (the farmer makes very little money, especially in commodity crops, subsidies!), unless of course you are paying the farmer directly for their food!



Examples of commodity or cash crops include:

Grains: Corn, wheat, barley, oats, millet, rice

Oil seeds: canola, soybeans

Fruits: apples, oranges, strawberries, blue berries, raspberries, bananas

Vegetables: potatoes

Coffee, chocolate, cotton, sugar cane

EQ8. Why are the crops in the text box (above, right) called commodity or cash crops?

From E-text: "Cash crops are those that are produced for profit and are often traded in commodity markets and exchanges".

EQ9. What areas of the planet have been heavily converted to agriculture?

see red circles on image.

EQ10. Of these areas that have been converted, which biomes have been most significantly impacted?

Many biomes are being impacted by agriculture. From E-text: "land use conversion, primarily to agriculture, has destroyed over two thirds of Mediterranean and temperate forests and more than half of the global temperate broadleaf and mixed forests, tropical and subtropical dry broadleaf forests, flooded grasslands and savannas, and tropical and sub-tropical grasslands, savannas, and shrub lands".

EQ11. What biomes are expected to be converted in the future?

Many of them! See image.

READ THIS: *Currently, 925 million people are considered food insecure due to a variety of reasons, with 870 million (or one in eight) people chronically undernourished. Most of these people live in developing countries. Food security is defined as "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life." According to the World Health Organization, there are three components to being food secure. First, food must be constantly available in sufficient quantities. Second, people should have the resources to obtain food that is nutritious, either by subsistence farming, fishing or hunting, or by having sufficient income to purchase food. And third, people should have an understanding of basic nutritional requirements and adequate water and sanitation.*

EQ12. Define "undernourished." What are three reasons why someone could be undernourished?

Inadequate food and water to have good health.

1. Lack of Access to food

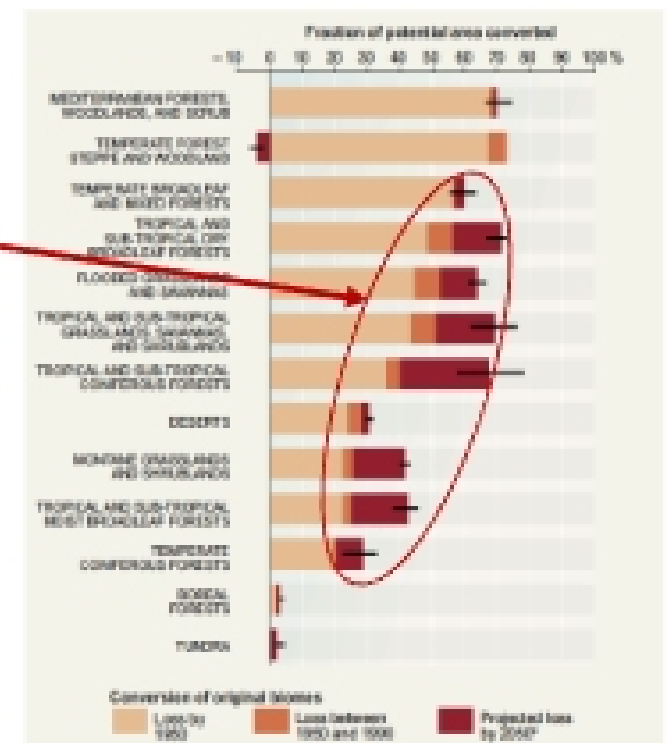
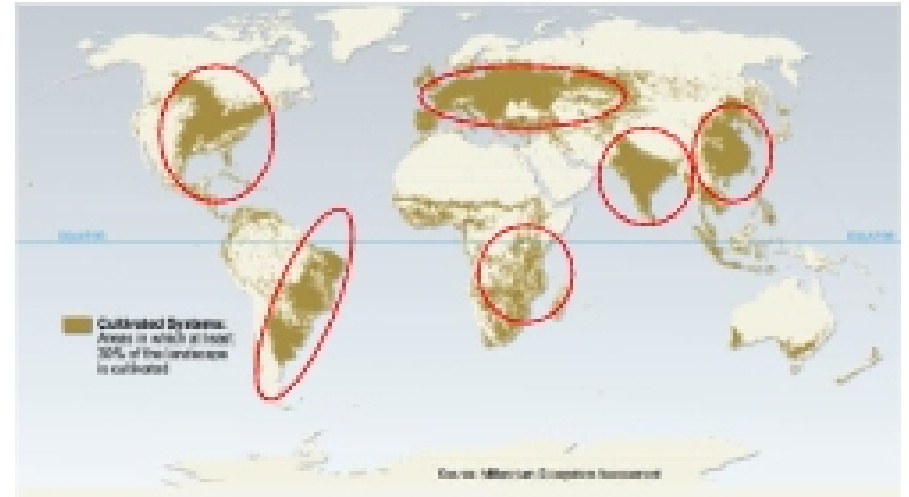
2. Poverty

3. Climate Change

4. Disease

5. Conflict

6. lack of access to clean/safe water



EQ13. How many people are chronically undernourished? How many are food insecure? Why differentiate between these two categories of "being hungry"?

From E-text:

"Currently 925 million people are considered food insecure due to a variety of reasons, with 870 million (or one in eight) people chronically undernourished. Most of these people live in developing countries. Food security is defined as "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life". According to the World Health Organization, there are three components to being food secure. First, food must be constantly available in sufficient quantities. Second, people should have the resources to obtain food that is nutritious either by subsistence farming, fishing or hunting, or by having sufficient income to purchase food. And third, people should have an understanding of basic nutritional requirements and adequate water and sanitation

IQ14. In a few grammatically correct sentences, describe how food insecurity and poverty are related. How could one cause the other?

Food insecurity and poverty are related. Poverty creates food insecurity because of lack of access to food, as well as malnutrition makes it hard to work and get more food. Those in poverty rely directly on their environment on a daily basis. Lack of good growing conditions, lack of water etc can limit how much food is possible increasing the likelihood of more malnutrition. This is a vicious cycle (in system speak a "positive feedback").

IQ15. It is estimated that food production will need to double by 2050 to support safe, adequate, and nutritious food for 9 billion people, although the population is expected to increase from 7 to 9 billion (not double). Why does food production need to double? (Hint: see Q6)

From E-text: "Grains that would have been used directly for consumption are now being fed to cattle, chickens, pigs, fish, and other sources of meat protein. This change in grain consumption, and the use of grain for biofuels is driving demand and also driving an increase in the price of food and consequently food insecurity. The need to increase production is also driven by the decline in wild foods. The decline of this important provisioning service will impact all peoples but especially the poor who rely on subsistence gathering, fishing, and hunting."

IQ16. Humans overcome limitations of the environment to provide more provisioning services.

- a. Describe some of the ways this was done historically (before large tractors, synthetic fertilizers and pesticides).



crop rotation, cow/animal manure, grow multiple varieties to avoid crop failure

- b. Describe some of the ways this is done today.



Irrigation , synthetic fertilizers and herbicides and pesticides!