

MAC Lesson Plan

Module: Earth as an Apple

Objectives: After completion of this module, students will be able to:

1. See how much of the earth is available for farming
2. Have knowledge of urban expansion and growing population
3. New ways to grow food (urban ag, vertical farming, GMO, aquaculture, Precision ag)
4. Eat some apples

Instruction time: 20

Materials provided:

- Earth as an apple
- Instructions on process
- Easel

Materials needed:

- Apples
- Hand sanitizer
- Knife

Teaching Strategies:

Objective 1: How much of the earth is available for farming.

1. Hold apple up and “this apple represents our planet earth”
2. Cut apple into quarters. Hold up $\frac{3}{4}$ in one hand. Ask class what do these $\frac{3}{4}$ represent?
3. WATER – $\frac{3}{4}$ of the earth is covered in water: oceans, lakes, and rivers
4. $\frac{1}{4}$ of the planet is land.
5. Cut the “land” $\frac{1}{4}$ in half. Hold one of the pieces. This represents uninhabitable land. (polar regions, deserts, swamps, and rocky or high mountains)
6. The other $\frac{1}{8}$ is habitable land, where people can live.
7. Cut $\frac{1}{8}$ into 4 equal pieces. Hold up 3 of the 4. “these $\frac{3}{32}$ represent land people can live on but not grow food. Some of the land was never able to grow crops because it was too rocky, wet, steep, cold, or has soil that was too poor to grow crops. Some of it was arable but isn’t any longer because it has been developed into cities, houses, or highways. Other land has been turned into parks, nature preserves or public lands.
8. The final $\frac{1}{32}$ has the potential to grow the food needed to feed all the people of the earth.
9. Carefully peel the $\frac{1}{32}$ this tiny bit represents the topsoil.

Objective 2: urban expansion and growing population

1 billion	1804	
2 billion	1927	123 years
3 billion	1960	33 years
4 billion	1974	14 years
5 billion	1987	13 years
6 billion	1999	12 years
7 billion	2011	12 years
8 billion	????	????

Where do all these people live? Where will the next billion live.

How big is a billion: 1 billion dimes stacked would reach 830 miles (Pocatello to Disneyland)

1 billion seconds = 32 years

1 billion minutes = 1900 years ago

Objective 3: other options for feeding the world.

People can grow food in new ways using new technology. In cities, in water, and the conventional way with new technology. All are the correct answer and all will be needed in the future to feed the world.

Objective 4: eat your apple and be happy - apple facts

US grows the second most apples in world.

Idaho is 10th in apple production in america

1774 – 1845 Johnny apple seed planted apples all over Ohio and Indiana teaching people about apples and care for orchards

Farmers and ranchers make up less than 2% of the US population

One U.S. farm feeds 168 people

The U.S. share of the world production:

Corn	36%
Soybeans	34%
Beef	19%
Milk	16%
Cotton	14%
Wheat	8%
Apples	7%

Precision agriculture is used by about 60% of farmers and ranchers

GPS and auto steering work together to help farmers identify exactly where to plant seed, how many, how much pesticide or fertilizer and much more.

Idaho national ranking:

Potatoes	1
Austrian winter peas	1
Barley	2
Alfalfa hay	2
Sugar beets	2
Prunes and Plums	3
Hops	3
Mint	3
Trout	1
Milk	3
Cheese	3

Idaho produces 185 commodities from 24,400 farms and ranches.

If Idahoans had to eat all we produced. Every day we would have to eat:

195 slices of bread
49 potatoes
2 onions
2 lbs. of cheese or 42 glasses of milk
1.5 lbs. of beef
3 cups of beans
and more.