

In this activity, an apple is used to demonstrate how small a proportion of the Earth has the appropriate physical conditions for successful agricultural activities. This is an Activating activity that also asks students to draw conclusions based on evidence (parts of the apple) and to respect the Earth as a complex environment in which humans have important responsibilities (make wise use of limited agricultural land).

Teachers should provide an appropriate background to the issues that will be highlighted in the demonstration. Arrange the classroom so that all students can view the demonstration, and prepare the required materials (apple, paring knife, paper towel).

Instructions

1. The apple represents the Earth. Cut it into quarters.
 - Three of the quarters represent the world's oceans. Put them aside.
 - One quarter represents the world's total land area.
2. Take the quarter that represents the land area and slice it in half.
 - Half of the quarter ($1/8$ of the whole apple) represents the parts of the Earth not suitable for human habitation (polar regions, deserts, mountains, etc.).
 - Put this piece aside.
3. The $1/8$ of the apple left represents the portion where humans can live (population ecumene).
 - Much of this $1/8$, however, is not suitable for agriculture.
4. Slice the $1/8$ apple into four sections (each piece is now only $1/32$ of the whole apple).
 - Three of these sections represent areas not suitable for agricultural production (inappropriate climate and soil conditions, land taken up by cities, highways, etc.).
 - Put them aside.
5. You are now left with only $1/32$ of the apple (Earth) that is suitable for agricultural activities (agricultural ecumene).
 - Carefully peel this piece (since agriculture takes place at the surface of the Earth in a soil layer approximately one metre thick and in the immediate atmosphere above it).
 - This small piece of apple peel represents the total area of agricultural land that has to feed the entire population of the planet.
 - As the population increases, more land is taken up by cities and highways, thus reducing the amount of agricultural land.
 - How will future populations be able to feed themselves?