The challenge of village farming

Focus questions	How many people farm in the world? What are the practices that the majority of global farmers use?

Adapted from an activity developed by Facing the Future (facingthefuture.org)

Nearly three-fourths of all farms worldwide are less than one hectare (about 2.5 acres). Just over ten percent of all farms are between 2.5 and 5 acres. Only one percent of farms are over 125 acres. (globalagriculture.org/report-topics/industrial-agriculture-and-small-scale-farming.html)

In the United States an average farm size is 441 acres (USDA, 2015). Different methods of farming are used on the farms in the United States than are used in other countries of the world, particularly developing ones.

In groups of 3–5, you will make farming decisions as a "village", determining what crops to plant in which of your 10 fields. Your production will be affected by events that are out of your control (i.e. government stability, corruption, weather events).

Materials

- One six-sided die
- Effects of malnutrition chart
- Year 1, 2, and 3 charts for crop placement, numbers of fields and calculations

Procedure

1. Your village has 10 small fields to plant.
2. You must plant at least *three different crops* to ensure a variety of food types and at least *two fields must be protein crops.* Label the fields where you plant each crop on the year 1 plot.
3. Determine your yields based on the weather dice roll: 1, 2, 3, 4 = dry year; 5, 6 = wet year 4. Use a pencil to fill out the worksheet.
4. Choose an impact card, read it aloud, and calculate impact losses. (Some impacts will affect all villages and some will affect only your village.)
5. Determine the effect of malnutrition based on your final total yield and the Effects of malnutrition chart.
6. Repeat activity for year 2 and year 3.
7. Once you have completed the simulation, each person will design a solution/set of solutions that reduce the negative effects of human activities on the environment and biodiversity, and that relies on scientific knowledge of the factors affecting changes and stability in biodiversity (i.e. overpopulation, overexploitation, and climate change). Evaluate the cost, safety, and reliability, as well as social, cultural, and environmental impacts, of the proposed solution(s) for this method of farming. Refine your proposed solutions by prioritizing criteria and making tradeoffs as necessary to further reduce environmental impact while addressing human needs.

Use the questions below to guide your thinking:

a. How does this method of farming, with the limitations you encountered, meet the needs of the people using these methods?
b. How might the methods of subsistence farming lead to problems that may increase the size of populations in areas where people are using these methods?
c. What new methods might be used? How might those methods impact the ecosystem?
d. What are the barriers to using new methods?
e. How might the introduction of technology reduce these barriers?

Reflection

1. How successful were you at growing enough food for your village?

2. How is this simulation realistic? Not realistic?

3. What suggestions would you recommend to an NGO to provide for your village?

4. Describe 3 specific differences between this farming simulation and commodity farming as it is practiced in the United States.

5. How do stability and change within farming practices play a role in US and subsistence farming systems?

6. What can the village learn from the United States?

7. What can the United States learn from your village?

8. What did you learn from completing this simulation?

Rubric for self-assessment

Skill	Yes	No	Unsure
I participated in the farming simulation with my group and collected data on yield.			
I can suggest a solution for lessening the impact of subsistence farming on the environment.			
I can suggest a set of solutions for increasing food production efficiency.			
I can prioritize the solutions and predict the barriers to implementing my solutions.			