INTERACTIVE FARMING ONLINE ACTIVITY

Background: Farmers know they have many choices to make when it comes to keeping soils healthy, making a living, and keeping down greenhouse gases. What choices would you make to reduce greenhouse gas emissions and make a profit?

Directions: Go to: http://forces.si.edu/soils/interactive/web/index.html "Click the Screen to Play"

Part One: Research

Research the different possible crops you can grow. Click on the picture of each crop to learn more about each crop. By clicking on "Flip," information will be provided.

I. Soybeans

1) What other crop is more popular than soybeans in the United States?

2) List four uses of soybeans

3) Using your knowledge of the nitrogen cycle, describe **how** soybeans replenish the soil of nitrogen?

II. Switch Grass

1) What is the main use of switch grass?

2) How do you think a perennial plant benefits farmers economically?

3) How would an aquatic environment downstream from a farm growing switchgrass benefit from the amount of fertilizer switchgrass needs?

III. Yellow Corn

1) How many millions of acres of land are used to grow corn in the United States?

2) List five uses of corn

3) How would an aquatic environment downstream from a farm growing corn possibly be affected (please describe exactly how from start to finish).

Part Two: Purchasing Time
Decide which crop you want to grow and click the “buy” button

1) Briefly describe till farming:

2) Briefly describe no-till farming

“Phone the Farmer”
Listen to more information about farming methods. In the chart below write a brief pros/cons about each method and the three issues to consider.

	Till Farming	No Till Farming
Weeds		
Erosion		
Emissions		

Farming Choice
Choose which farming method you’d like to use (No Till vs till).

Phone the farmer again and listen to the information about fertilizer.

1) Bacteria convert nitrogen into what?

2) Why is this an environmental problem?

Fertilizer Time

Choose the amount of fertilizer you'd like to use depending on the needs of your particular crop. Based on your choices recreate your crop yield and greenhouse emissions

Crop Yield (in tons)	house Gas Emissions (molecules per acre)

Using the "recalculate" button to answer the following:

1) Describe the conditions that would provide a high yield of crops as well as a high level of greenhouse gas emissions.

2) Why would these methods be chosen instead of ones with a lower environmental impact?

3) Which crop, farming method and amount of fertilizer provides the **highest crop yield** and a low greenhouse gas emission (to change your crop you have to start the game over by clicking "exit")?

4) Which crop, farming method and amount of fertilizer provides a high crop yield and **lowest greenhouse gas emission**?

5) Implement no till and no fertilizer when growing corn- what happens with crop yield and GHG emissions?

6) Looking back through the information you discovered when researching corn, switchgrass and soybeans:

a) Discuss the popularity of corn compared to soybeans and switchgrass as well as its environmental impact

b) Discuss the how/what needs to be done in order to decrease the amount of corn grown in regards to:

i. Food

ii. Livestock feed

iii. Biofuels