STUDENT GUIDE
EXPLORE 1 LESSON 16

Food and Agriculture Center for Science Education

💡 Part 1: Our Motivation

Record what we were trying to figure out that led to this investigation.

> We were trying to figure out exactly how the changes to land would affect biodiversity. Some questions we had were:
> - What plants and animals are affected by the dairy industry?
> - How is biodiversity measured?
> - How does the construction of the dairy system impact the local biodiversity?
> - How does the construction of the dairy system change the number or variety of species present in the lands used?

📈 Part 2: Analyzing Data on Changes to Biodiversity

How could you determine if biodiversity is changing in an area?

> If there are numbers of different animals and plants present in a certain area is changing over time.

You will use a spreadsheet to create a mathematical model to determine how the biodiversity of plants and animals changes as wild areas get converted to monocultured or dairy-farmed lands. You will do this using the Lesson 16 Plant and Animal Counts in Different Fields spreadsheet and the instructions from the Lesson 16 Handout Monoculture Crop vs Undisturbed Land.

After completing your computational model, analyze the values for Simpson's Biodiversity Index that you find between the two locations. What patterns of biodiversity exist between the two locations? Use evidence to support your response.

> I realized from the calculations that the undisturbed land had the most biodiversity. I think that the more diversity in the amount of habitats, then variety of plants and animals in that area will be higher too. The average biodiversity in the undisturbed lands was 0.901, and the average biodiversity from the monoculture farmland was 0.802.

What impact does human activity have on biodiversity? Why? Use evidence from your spreadsheet calculations to support your response.

Human activities like planting monocultured crops decreases biodiversity. The average biodiversity in the undisturbed lands was 0.901, and the average biodiversity from the monoculture farmland was 0.802. I think this is because there are less habitats for plants and animals in the monocultured farmland.

How did creating the spreadsheet model help you reveal patterns in biodiversity?

It wasn't clear just by looking at the number of plants and animals which of the locations had the greatest biodiversity. The spreadsheet calculations allowed us to identify which of the three locations had the greatest and least biodiversity.