

STUDENT GUIDE

ENGAGE LESSON 15



Part 1: Our Motivation

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

We are hoping to figure out how the dairy system impacts biodiversity. Some questions we wanted to figure out are:

- How does the dairy system impact plants?
- Are dairy cattle a danger to certain wildlife species?
- How do the buildings and vehicles used in this system impact plants and animals?



Part 2: Observing the Investigative Phenomenon

After watching the videos on how a dairy farm is created, record what you observed and reflect on how this could impact nearby plants and animals.

Video 1	In the first video, it looks like farmers clear land to grow crops for cattle feed. They only grow crops there. Other plants cannot grow there. This practice could impact native plant species.
Video 2	The videos with the overview of the dairy farm make me realize it is a large operation that takes up a lot of land. This could take away land from native animals and plants.

What do you think the intent was in designing the dairy production buildings in this way?

I believe the dairy farmers chose this system design so that they could have all their cattle in one place. For example, having the large barns keeps them in one place. The design also may allow them to have many animals in a smaller area. Therefore, they can produce a lot of milk at a low cost. They might not be able to graze in the barns, so they might need to supplement the cattle's diet with feed. I also see that other dairy cattle can go out of the buildings and eat.

Do you think the dairy system was designed to take into account an impact to nearby plants and animals? Why or why not? Does this matter?

It doesn't seem like the design of the system took into account the nearby plants and animals. All they did was clear the land and didn't replace the habitats of the plants and animals with anything else that the plants and animals could use.





Part 3: Creating and Sharing Initial Models

Create an initial model that shows how you would currently answer our module question, “*What impact does the dairy production system have on biodiversity?*” Choose any model type that you think is best to show your thinking.



Review the models of your peers and record the strengths and limitations of the different model types that your peers used.

Model Type	Strength	Limitation



Part 4: Asking New Questions

Individually, brainstorm five questions that you would like to ask to find clarity on the question “How does the dairy system impact nearby plants and animals? Why does it matter?”

Share this list with a partner to decide on the three best questions.

Then, make a group of four to share again and to choose the best/most significant question to share with the class.

5 Questions about biodiversity impacts of dairy system	1. How does the set-up of the dairy system impact the local ecosystem? 2. What habitats are destroyed by the dairy industry? 3. Does the dairy industry do anything to help plants and/or animals other than cows? 4. What ecosystems can the dairy system impact? 5. What ecosystems do the cows interact with? Is that interaction beneficial or costly?
3 Most Important Questions (with partner consensus)	1. Student responses will vary based on their selections. 2. 3.
1 Best Question (with small group consensus)	1. Student responses will vary based on their selections.