



Build Competencies in **sustainability** MATTERS

PROJECT

Agriculture

9

11

Ecosystem cycles



MAKE IT PERSONAL

How are you part of the food web?



EXPLORE

1. Agroecosystem Cycles

Use the cycle diagrams in **WHAT ARE SUSTAINABLE AGROECOSYSTEMS?** to analyze how nutrients in a natural ecosystem compare to the cycles that exist in an agroecosystem.

Use the cards on the page that follows to create a **Triple T-Chart**, labelled like the example below. Work with a partner or in a small group to place each card in the appropriate row and column of the chart.



	Natural Ecosystems	Agroecosystems
General Characteristics		
Food Chains		
Food Webs		
Energy		
Plants		
Animals		



Consult **WHAT ARE SUSTAINABLE AGROECOSYSTEMS?** for these learning tasks. Use the Learning Source and the information for this guiding question in the **Sustainability Matters** carousel on www.projectagriculture.ca. Check out these weblinks for additional information.

Read the article on *Agroecology* on the USC Canada website at www.usc-canada.org/the-issues/agroecology.

Find information in *Chicken Farmers of Canada Sustainability Report* at www.chicken.ab.ca/wp-content/uploads/2019/04/Sustainability20report20ENG-20Nov202018.pdf.

Review the information in *Farming for the Future: The Sustainability of Dairy Farming* at <https://dairyfarmersofcanada.ca/en/farming-future-sustainability-dairy-farming>.

Find Egg Farmers of Alberta Sustainability Reports at <https://eggs.ab.ca/about/sustainability-reports/>.

Closed Balanced Stable Diversity	Mixed, long and short	Few species Controlled competition
Open May have imbalances Changing Limited diversity	All solar No subsidy Very little in or out	Few to moderate numbers Mostly herbivores with some carnivores Natural selection for survival Animals adapted to conditions
Usually short	Many herbivores and omnivores Predators controlled or eliminated Selection for specific production traits Environment modified to suit animals	Complex
Many species Quite a lot of competition	Simple	Solar Low to continual subsidy Chemical in, biological out

2. Agroecosystem Food Webs

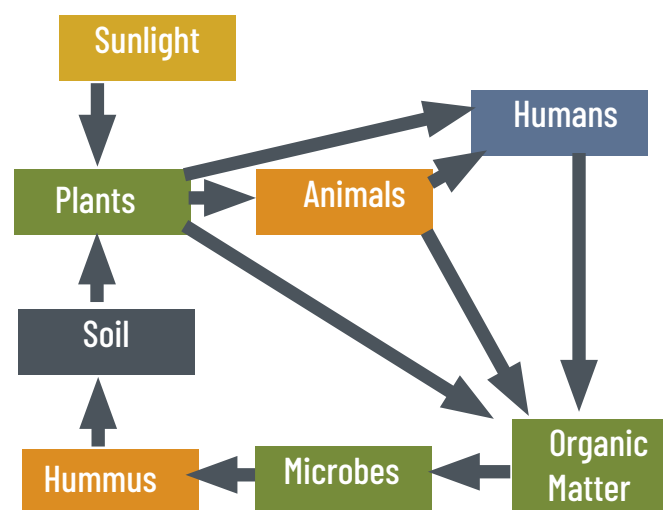
Use the information in **WHAT ARE SUSTAINABLE AGROECOSYSTEMS?** to build a food web that illustrates a sustainable agroecosystem. Label the trophic levels in the food web as categories of organisms, including primary producers, herbivores, omnivores and carnivores.

Chose a natural ecosystem and list all of the species you can think of that are found at each trophic level in the natural ecosystem.

Then, build a second food web for one of the following types of farms, and list all of the species you might find at each trophic level.

- 🔥 Poultry, such as a chicken or turkey farm
- 🔥 Dairy farm
- 🔥 Egg farm

Use the simple illustration as a starting point.



Describe how the natural ecosystem and the agroecosystem compare. How do they differ?

What impact do you think a food trend such as veganism or buying local could have on an agricultural food web?

How would one of the following agricultural practices that promote sustainable agroecosystems affect your food web?

- 🔥 Use of fertilizers or manure to supplement soil nutrients
- 🔥 Amount of land used for the production of livestock feed
- 🔥 Protection of natural water sources
