smart data

MAKE IT PERSONAL

What evidence do you see of biodiversity in your community?

What evidence do you see of climate change in your community?

123 INVESTIGATE

1. Data and Biodiversity

How is data used to determine risk of biodiversity loss? What does this have to do with agriculture in Alberta? **Biodiversity risk** refers to the loss of biological diversity, or the variety of plant and animal life in agricultural landscapes. This decrease in biodiversity is believed to affect the overall health of the environment. A diverse ecosystem is better able to respond to environmental changes or stresses, such as floods, drought, pests and disease.

Use the information in *Biodiversity Risk* to compare areas of risk in Alberta. Scroll down the webpage at **www.alberta.ca/biodiversity-risk.aspx** to find the map that indicates biodiversity risk for agricultural area. Answer the questions that follow.

Use **HOW DO BIODIVERSITY AND CLIMATE CHANGE AFFECT SMART AGRICULTURE SOLUTIONS?** for these learning tasks. Use the Learning Source and the information for this guiding question in the **smart AGRICULTURE** carousel on **www.projectagriculture.ca**. Check out these weblinks for additional information.

Find information on biodiversity on the Alberta Biodiversity Monitoring Institute at www.abmi.ca/home.html. Explore a section on *Biodiversity and Climate Change* at www.abmi.ca/home/biodiversity/biodiversity-climate-change.html.

Use information on biodiversity risk and agriculture from the Agricultural Land Resource Atlas of Alberta at www.alberta.ca/biodiversity-risk.aspx.

Find a number of articles and sources on the Climate Atlas of Canada website at https://climateatlas.ca, including a section focused on agriculture at https://climateatlas.ca/topic/agriculture.

Explore climate change through the interactive map on the Climate Atlas of Canada website at https://climateatlas.ca/map/canada/plus30_2060_85#.

Alternatively, create a **T-Chart** that compares high and low risk, using these questions and the biodiversity data to complete it.

What risks are posed by agricultural activity?

What benefits can agriculture provide for biodiversity protection?

How would you describe the areas of highest risk?

How would you describe the areas of lowest risk?

What patterns do you see? What reasons would you propose for these levels of risk?

2. Climate Predictions

Predict what may happen to climate over two future time periods using the agriculture maps and data in the *Climate Atlas of Canada* at **https://climateatlas.ca/climate-change-maps-agriculture**. Click on the MAP tab at the top of the webpage. Then, follow these steps.

1. Select **one** of the following factors. Use the icons on the bottom of the map to find and select these factors. Read the explanation; then, click **Display the Map**.
    - Frost Free Season (in Growing Season menu)
    - Growing Degree Days — Base 15°C (in Growing Season menu)
    - Heavy Precipitation Days — 10 mm (in Precipitation menu)
    - Very Hot Days (in Hot Weather menu)
2. The map is displayed in grids that allow you to select a specific area. Select and click on an Alberta area on the map. You may choose to look at your community.
3. At the bottom of the map you will see two sliding bars. One bar allows you to choose between high climate change and low climate change. The second bar allows you to select time periods.

    Record the data that you find for the area over the three time periods for two climate change scenarios — the high carbon scenario and the low carbon scenario. Use a **Retrieval Chart** labelled like the one below.

Time period	1975-2005	2021-2050	2051-2080	Change
Climate change scenario: High carbon				
Climate change scenario: Low carbon				

Look at your data. What conclusions can you make?

What do you think the impact of the high carbon climate change scenario will be on agriculture in your area?

What impact do you think the high carbon climate change scenario will have on your accessibility of food varieties?

Compare your data with another classmate. What differences or similarities do you observe? What observations can you make together?

What impact do you think climate change may have on biodiversity of agricultural ecosystems? How could this impact affect human livelihoods?

What responsibility do you think individuals and communities have to protect agricultural biodiversity?