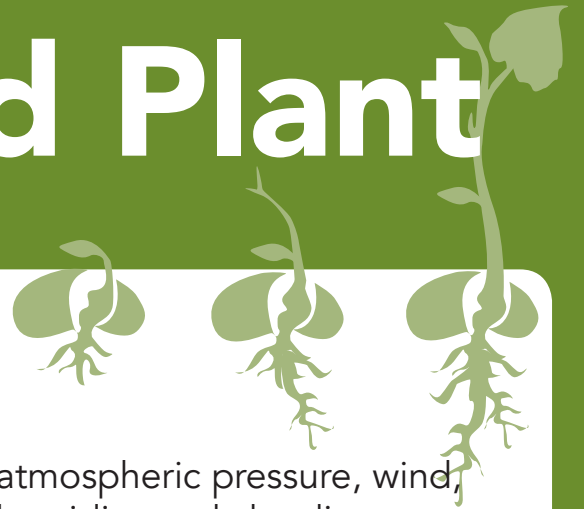


## Lesson 6

# Climate and Plant Growth



### Summary

Students review the climatic factors that influence plant growth and review the concept of growing seasons. They read and interpret climographs to characterize the climates of multiple biomes. They also discuss the factors that limit growing seasons in different biomes.

### Learning Objectives

Students will be able to:

- Explain how the climatic variables temperature and precipitation determine growing seasons.
- Read and interpret climographs and match them to appropriate biomes.
- Discuss the factors that limit growing seasons in different biomes.

### Vocabulary

- *Weather*: The state of the atmosphere, at particular time and place, with regard to temperature, precipitation,

atmospheric pressure, wind, humidity, and cloudiness.

- *Climate*: Weather patterns that are characteristic of a region over a long period of time, usually at least 30 years.
- *Precipitation*: All forms in which water falls to earth from the atmosphere, including rain, snow, sleet, and hail.
- *Temperature*: A measurement that indicates how hot or cold something is.
- *Biome*: A geographic region with a distinct climate and plant and animal life.
- *Climograph*: A graph that shows the annual (yearly) cycle of temperature and precipitation for a geographic location.
- *Species distribution*: The geographic area where a species can be found.
- *Growing season*: The time period when optimal temperature and precipitation levels allow plants to grow.

## Materials

- Climate and Plant Growth PowerPoint
- Climate and Plant Growth Worksheet KEY
- Climate and Plant Growth Worksheet
- Biome Description Cards (1 set of 5 per pair)

## Optional

- Celsius and Fahrenheit Activity (Lesson 2)

## Teacher Preparation

- Copy Climate and Plant Growth Worksheet (1 per student)
- Copy Biome Description Cards (1 set of 5 per student pair)
- **Optional:** Copy Celsius and Fahrenheit Activity (1 per student)

# Activities

## Part 1 (10 minutes)

### Engage

1. Yesterday we learned how different tree species respond to changes in climatic factors such as temperature and precipitation. Today, we are going to talk more about how climate determines where plants live and when they can grow during the year. Where plants live is called a distribution, or geographic range. When plants grow during the year is called a growing season.
2. Let's review, what are the main factors that make up climate? **Accept student answers.** Climate is determined by temperature and precipitation. Weather and climate are also influenced by changes in humidity, air pressure, latitude, elevation, ocean currents, and vegetation cover. This creates many different climates throughout the planet.
3. How are your lives affected by the climate where you live? What aspects of your home and community are influenced by the climate? **Accept student answers.** Answers include the clothing they wear, what food is grown there, seasonal recreational opportunities, and local plant and animal life.

## Part 2 (25 minutes)

### Explore

1. Distribute the Climate and Plant Growth Worksheet (1 per student).
2. Show the Lesson 6 PowerPoint while students fill in Part A of the worksheet. The first seven slides review concepts covered in previous lessons. This includes weather, climate, and growing season.
3. When you get to the Climographs and Biomes Activity (Slide 11), distribute the Biome Description Cards (1 set of 5 per pair).
4. Have students work in pairs to complete Part B on the Climate and Plant Growth Worksheet. Use Slide 11 of the PowerPoint as a visual aide as students work through the activity.

5. **Optional:** If time allows, hand out the Celsius and Fahrenheit Activity as students finish the Climographs and Biomes Activity.

## Part 3 (15 minutes)

### Explain

1. End the Climographs and Biomes Activity by leading a class discussion of students' answers. Use Slide 12 of the PowerPoint and the Biome Description Cards as a guide.
2. If time permits, introduce Lesson 7 using Slide 13 of the PowerPoint.

## Part 4

### Evaluate

- Collect the Climate and Plant Growth Worksheet.
- Collect the optional Celsius and Fahrenheit Activity.



## Michigan Grade Level Content Expectations (Grade 7)

- E.ES.07.71 Compare and contrast the difference and relationship between climate and weather.
- S.IP.07.16 Identify patterns in data.
- S.IA.07.11 Analyze information from data tables and graphs to answer scientific questions.
- G3.1.1 Construct and analyze climate graphs for locations at different latitudes and elevations in the region to answer geographic questions and make predictions based on patterns.
- G3.2.1 Explain how and why ecosystems differ as a consequence of differences in latitude, elevation, and human activities.

## Next Generation Science Standards (Middle School)

### Performance Expectations

Students who demonstrate understanding can:

- MS-LS1-5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
- MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

### Science and Engineering Practices

#### Constructing Explanations and Designing Solutions

- Construct a scientific explanation based on valid and reliable evidence obtained from sources and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-LS1-5)

#### Analyzing and Interpreting Data

- Analyze and interpret data to provide evidence for phenomena. (MS-LS2-1)

### Disciplinary Core Ideas

#### LS1.B Growth and Development of Organisms

- Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5)

#### LS2.A Interdependent Relationships in Ecosystems

- Organisms, and populations or organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)
- Growth of organisms and population increases are limited by access to resources. (MS-LS2-1)

### Crosscutting Concepts

#### Cause and Effect

- Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. (MS-LS1-5)
- Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-LS2-1)