Important Concepts . . .

Preview Review

Science *Grade 7* *Teacher Key*

W2 - Lesson 4: Role of Plants and Controlling Plant Growth

V5-07

Important Concepts of Grade 7 Science

W1 - Lesson 1 ..... Interactions and Interdependencies
W1 - Lesson 2 ..... Nutrient Cycles, Energy Flows, and Changes in Ecosystems
W1 - Lesson 3A ..... Environmental Impacts of Human Activities
W1 - Lesson 3B ..... The Particle Model of Matter, Temperature, Heat, and Change of State
W1 - Lesson 4 ..... Heat Transfer
W1 - Lesson 5 ..... Understanding Heat and Temperature in Nature and Technology
W1- Quiz
W2 - Lesson 1 ..... Life Processes and Structure of Plants
W2 - Lesson 2 ..... Plant Propagation and Reproduction
W2 - Lesson 3 ..... Plant Needs and Growing Conditions
W2 - Lesson 4 ..... Role of Plants and Controlling Plant Growth
W2 - Lesson 5 ..... Review of Plant Management
W2 - Quiz
W3 - Lesson 1 ..... Forces on and within Structures
W3 - Lesson 2 ..... Structural Forms
W3 - Lesson 3A ..... Materials Used in Structures
W3 - Lesson 3B ..... Rocks, Weathering, and Erosion - The Rock Cycle
W3 - Lesson 4 ..... Plate Tectonics and Related Events
W3 - Lesson 5 ..... Fossils
W3 - Quiz.....

Materials Required.

Textbook:
Science in Action 7

Science Grade 7
Version 5
Preview/Review W2 - Lesson 4 TEACHER KEY

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Preview/Review Concepts for Grade Seven Science

TEACHER KEY

W2 - Lesson 4: Role of Plants and Controlling Plant Growth

OBJECTIVES

By the end of this lesson, you should be able to

- explain the role plants play in the biosphere
- explain the uses of plants by humans
- discuss various methods of controlling plant growth

GLOSSARY

crop rotation - growing a succession of crops in a regular order in a field

fertilizer - a substance used to enhance soil nutrients

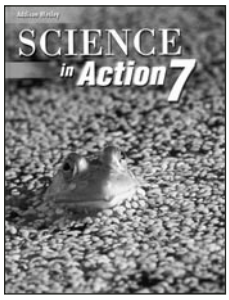
hydroponics - growing plants without soil.

irrigation - human controlled watering of crops

W2 - Lesson 4: Role of Plants and Controlling Plant Growth

Humans and plants interact constantly. What features of plants make them important to us and to other living organisms? And why do we want to be able to control plant growth?

The Role of Plants



To answer the first question, let's look at the roles of plants. Plants have roles both in the biosphere as a whole and with people specifically. In the biosphere, plants provide oxygen, shelter, and food for consumers. Read page 129 of *Science in Action 7*.

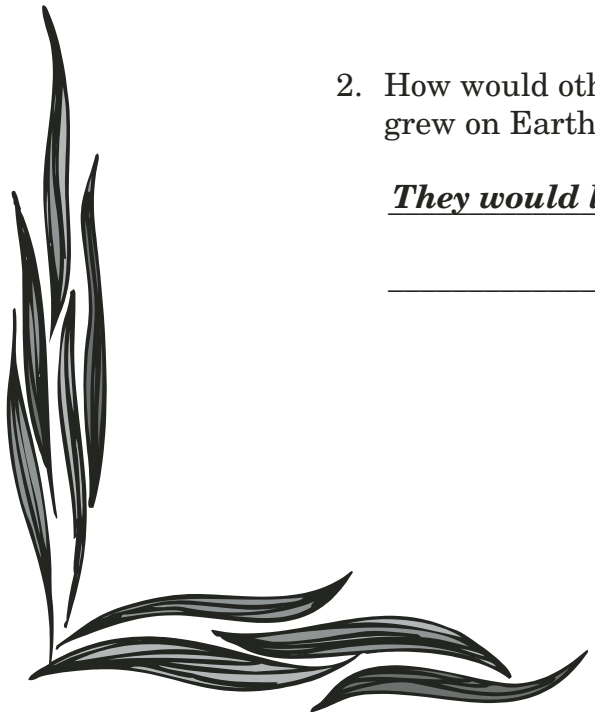
Some of the ways that humans specifically use plants are for fibres, building materials, and medicines. Read pages 130 to 132 of your textbook.

1. How would humans be harmed if no or few plants grew on Earth?

   In many ways, for example, we would run out of oxygen, we would lack food; we wouldn't have building supplies or fibres for cloth etc.

2. How would other living organisms be harmed if no or few plants grew on Earth?

   They would lack oxygen, food, shelter, etc.



3. Some illnesses can be cured by plant products. Name such an illness and the plant used to treat it.

   From the text – Scurvy – cured with plant matter high in Vitamin C.

Controlling Plant Growth

When we grow plants for our use, we want to get the best possible yield. We also want the quality to be high and the product to be available for as much of the year as possible. A great deal of work has gone into developing technology to help us do just that.

By providing nutrients that are lacking or insufficient in the soil we give plants a better chance to grow in the desired way. Adding chemical fertilizers to the soil is a common way to improve plant growth (pages 144, 145, 147, and 148 of *Science in Action 7*). Two low-tech methods of adding nutrients to the soil are rotating crops and mixing in compost.

4. What type of soil improvement is the use of crop rotation to add nutrients to the soil?

   organic

5. Although chemical fertilizers provide nutrients to plants, they also can cause some problems if they are used improperly. What are some of the disadvantages of using this type of fertilizer?

   If too much is added, the plant can be harmed. Runoff carrying the fertilizer can pollute bodies of water and lead to an algal bloom.

Most of the plants we grow do not do well in dry conditions. When people farm in areas where there is little rain, they often resort to irrigation (page 145 of textbook), or watering their crops.

6. What are some things that must be kept in mind when irrigating land? Why?

   Do not over-irrigate because soil can become salty (water dissolves salts in the soil). Soil can become waterlogged, therefore lacking in air for the roots, etc.

7. Is there anywhere in Alberta where irrigation is used by farmers?

   Southern Alberta

Pests and weeds of various kinds can seriously harm the productivity of plants. Some plants have natural means of protecting themselves from such things. However, people who harvest the plants will often try to get rid of the weed or pest. Read pages 160-162 of *Science in Action 7*.

8. What are two basic ways to deal with pests?

   chemically and biologically

9. What is one way to control pests other than by using a chemical? Why is this not used as much as chemical control?

   Answers can vary. An example is using another organism to deal with the pest. E.g., Ladybugs to control aphids and picking the bugs. Not used as much as chemical control because it doesn't work immediately, and can't handle large outbreaks of pests.

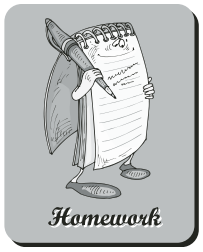
People also use technologies such as greenhouses and hydroponics to help them grow plants. Read page 155.

10. What are some advantages of growing plants hydroponically?

The nutrient levels are closely controlled. Don't need soil which may not be fertile in a particular area. May help control disease found in soil. Keeps the produce cleaner.

11. Why would someone choose to grow plants in a greenhouse rather than outdoors?

Conditions can be controlled – temperature, light, humidity. Plants can grow in a location they couldn't if they weren't in the greenhouse.



Homework

12. Talk to someone who gardens or farms. Find out if they use any of the strategies you learned about in this lesson and why. Bring the information you discover to school.

Answers will vary.

13. List as many ways as possible that you depend on plants.

Answers will vary, but should include oxygen production, food, shelter, and fibres. May include medicines.