

Important Concepts . . .

Preview Review



Science

Grade 7 TEACHER KEY

***W2 - Lesson 3: Plant Needs and
Growing Conditions***

Important Concepts of Grade 7 Science

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Materials Required.

Textbook:
Science in Action 7

Science Grade 7
Version 5
Preview/Review W2 - Lesson 3 TEACHER KEY

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Preview/Review Concepts for Grade Seven Science

TEACHER KEY



*W2 - Lesson 3: Plant Needs
and Growing Conditions*

OBJECTIVES

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

- name important plant nutrients and explain the roles of some of them
- describe how water and other abiotic factors are important to plant life
- explain characteristics of soil and how human activities can affect it

GLOSSARY

essential nutrient - a nutrient that a plant cannot live without in large amounts

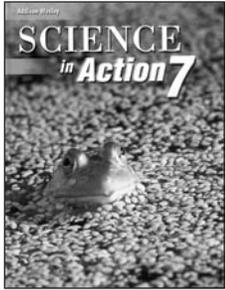
habitat - where an organism lives

nutrients - substances that plants use for energy and for building cell material

W2 - Lesson 3: Plant Needs and Growing Conditions

Plants, like any other type of organism, have nutritional and environmental requirements. Some of the requirements are common to all plants; others are specific to the type of plant.

Nutrients



Plants use many **nutrients**. Some are more important to the plant than others. Nutrients that plants must have in fairly large amounts are called **essential nutrients**. These include nitrogen, phosphorus, potassium, calcium, magnesium, and sulphur.

Nitrogen is important for the growth of healthy green leaves. Phosphorus stimulates germination and seedling growth. Potassium aids flowering and fruit production. Read pages 121 and 122 of *Science in Action 7*.

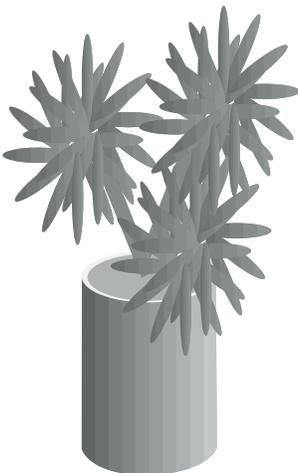
1. If a plant has pale green leaves, what nutrient might it be lacking?

Nitrogen

2. Why do plants such as beans, peas, and clover not need fertilizer that contains nitrogen?

They can “make their own nitrogen”.

Water



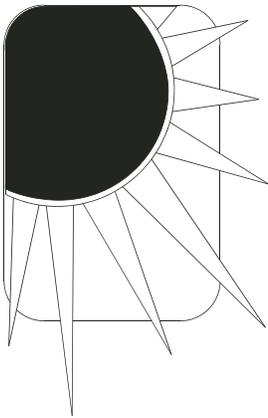
All living organisms need water to survive. It has an important role not only in their structure but also in various life processes. Each type of plant has adaptations to live in an area with particular moisture levels.

3. Name a plant that can grow in low moisture conditions.

Answers will vary, but a common answer is cacti.

4. Name a plant that needs high moisture levels.

Answers will vary, but an example is tomatoes.



Sunlight

Sunlight is vital to all plants. Plants need sunlight to perform photosynthesis and make food for themselves. Some plants prefer to grow in low light levels others prefer high levels of light.

5. What type of light level do you think most grasses prefer?

Bright, high light levels – they tend to live in open areas.

6. Does a forest floor plant prefer low or high light levels?

low light levels

7. What would you expect to happen to a plant that requires high light levels if it were moved to an area with low light levels?

It would probably suffer from the lack of light.

8. Why are plants sometimes grown in greenhouses?

To provide the best growth conditions possible

(temperature, nutrients, water, etc.) To control

growth factors.

Other Factors

In order to grow well, plants require an appropriate habitat. Habitat includes physical location and the amount of growing space available. It also includes abiotic factors such as temperature and water. Read page 164 of *Science in Action 7*.

- Farmers in the developed world tend to plant monocultures. Explain what this is, and give the pros and cons of this practice.

Monoculture is growing one type of plant in an area.

Pros – easier for farmer to deal with. Cons – decreases

biodiversity, changes habitat, may lead to explosion in

pest population.

- What types of challenges does a plant face when it is moved from a tropical rainforest to Edmonton (outdoors)?

Challenges such as temperature, light, and moisture

levels.

- What are some ways that activities such as oil and gas exploration or logging cause problems for wild plants?

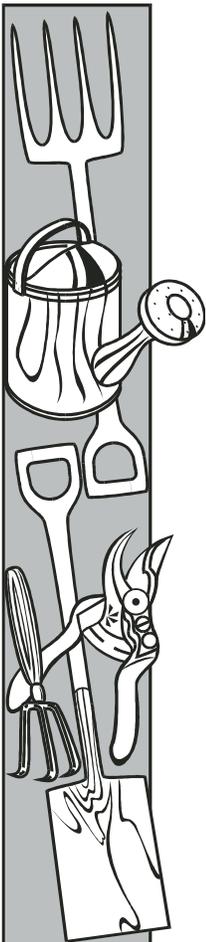
Removal of land cover – plants and soil, new corridors

for various organisms and humans to get to area and

negatively affect the plants.

- Name a plant that is threatened because of habitat destruction.

Answers will vary. An example is the cucumber tree.



13. Why do ecologists tend to oppose the practice of strip mining?

It destroys habitat.

Soil

Soil and plants are found together in almost all growing situations on land. Plants usually get their nutrients from soil and anchor themselves to the earth in it. Therefore, it is important that we maintain the health of the soil. Soil is made of both mineral (broken-down rock) and organic (once-living) particles. Each type of soil contains different types of these particles. Between the particles are spaces where water and air can fit. Because soils are made from different things, each type has different characteristics and will suit different types of plants.

We are especially concerned about the condition of the soil when we grow plants for human use. More information can be found on pages 141-142 and pages 144-148 of *Science in Action 7*.

14. Explain some processes that can be used to maintain and improve the health of soil. (Not all possibilities are discussed in your text.)

Answers will vary, but common examples are crop

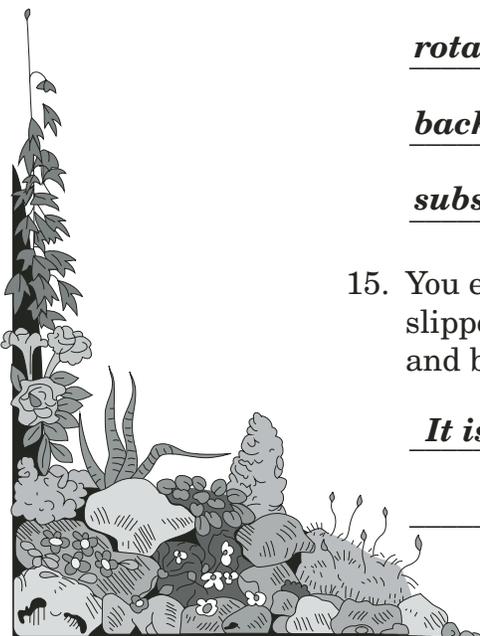
rotation, preventing erosion, adding organic matter

back to soil, avoiding contamination by harmful

substances, etc.

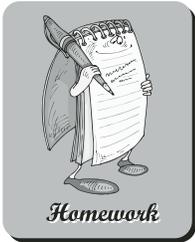
15. You examined the soil in a garden and found that it was slippery to the touch. When you walked on it, it packed easily and became difficult to work. What type of soil is it?

It is a clay.



16. How can tilling negatively affect soil conditions?

Overtime, it can break up clumps so the particles become too small. It can also compact it.



Homework

17. At home, find some soil in your yard, a park, or even a flower pot. Examine it, smell it, squeeze some of it – moist and dry, if possible. Classify it as sandy, clay, or loam soil. Give reasons for your classification.

Answers will vary depending on the observed characteristics.

18. Find some fertilizer. Look at the numbers on the container. They indicate (in order) the percentage of nitrogen, phosphorus, and potassium. An example is 20-20-20. This means the fertilizer is 20 % nitrogen, 20% phosphorus, and 20% potassium. Is the mixture for leaf growth, germination, seedling growth, or flowering and fruit production?

Answers will vary depending on which nutrient is in greatest amount. Eg. 20-0-0 would be just nitrogen-for leaf growth. One that has equal amounts would be balanced for the 4 uses.

19. Ask someone who grows plants for the name of a plant that requires bright light, and the name of one that does well in low light levels. Record the names of the plants.

Bright light *Answers will vary.*

Low light *Answers will vary.*



