



BIG GREEN LESSONS

Plant Needs: 3rd – 5th Grades

Lesson Outcomes

In this lesson, students will identify that plants need specific things to grow into a healthy plant.

- Plants need L.A.W.N.S.: light, air, water, nutrients, and space to grow.
- Air and water serve a vital role in the growth process.

Standards Alignment

Common Core – English Language Arts

- SL.3.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
- SL.3.3. Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
- SL.3.4. Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
- SL.3.6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.
- SL.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- SL.4.3. Identify the reasons and evidence a speaker provides to support particular points.
- SL.4.4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
- SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
- SL.5.3. Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.
- SL.5.4. Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Next Generation Science Standards

- 3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.



- 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.

Materials and Preparation

- L.A.W.N.S. Scavenger Hunt (front and back), one sheet per student group
- Clipboard or hard surface for sketching and coloring
- Pencil, coloring materials
- Familiarize yourself with your Learning Garden

Reminder: Big Green's Garden Educators are always available for additional support via email or by phone call

Teacher Background

Plants meet their needs in different ways in different environments because the availability of resources varies from one ecosystem to another. Plants, like all living things, have basic needs that must be met for them to survive. These needs include light, air, water, a source of nutrition, space to live and grow and optimal temperature.

There is an easy acronym to help remember basic plant needs (the things that plants need to survive and thrive): L.A.W.N.S.

LIGHT: Leaves capture energy from the sun, then convert and store that energy as a type of sugar called glucose. Plants use glucose to grow strong and eventually flower and reproduce. Sunlight also provides heat, which is needed for plants to survive. Each plant has an optimal temperature range depending on the crop and the variety. The sunlight and changing seasons allow us to grow a variety of crops at different times during the year based on the optimal growing season.

AIR: Plants take in carbon dioxide (CO₂) from the air and convert it into glucose (a type of sugar) through the process of photosynthesis, which is powered by sunlight.

WATER: All living things, including plants, are comprised mostly of water. In fact, the human body is made up of 2/3 water. Water supports the transportation of nutrients from the soil up into the structures of the plant, is used in the process of photosynthesis, helps keep plants standing strong and upright (not wilted or droopy), and water helps keep plants cool as it evaporates from the leaves.

NUTRIENTS: Plants must take up essential nutrients from the soil to support their growth. These nutrients include nitrogen, phosphorus, potassium (commonly listed as N-P-K), calcium, and magnesium. Plants also need hydrogen, oxygen, and carbon in large quantities; they're able to absorb those nutrients from the air and water.



SPACE: Roots and foliage take up space. Each plant has their own specific space requirement needs. Plants that are spaced too close together will be stressed as they compete for their basic needs, resulting in weaker plants, higher susceptibility to diseases and insects, and ultimately poor food production.

Classroom Activity

During the classroom portion of today's lesson, students will be learning about the needs of plants using the acronym L.A.W.N.S.

1. On the whiteboard or a large piece of paper, write the letters L.A.W.N.S. vertically. Let your students know that plant needs can be distilled down to the acronym L.A.W.N.S. Define 'acronym' if necessary.
2. Invite your students to look at the acronym L.A.W.N.S., and as a class have your students try to fill in the word associated with each letter. Encourage hand raising.
3. As your students correctly fill in each letter of the acronym, or after you have filled in the entire acronym, describe and define each plant need, and how it relates to your Learning Garden and the plants being able to grow strong and healthy.
4. You may ask your students to take notes on the acronym L.A.W.N.S. and record the definition of each plant need on a separate piece of paper.

LIGHT: supports photosynthesis (the process where plants turn air and water into glucose or stored energy). In addition, sunlight also provides heat which plants need to grow; each plant has an optimal temperature for germination and growth.

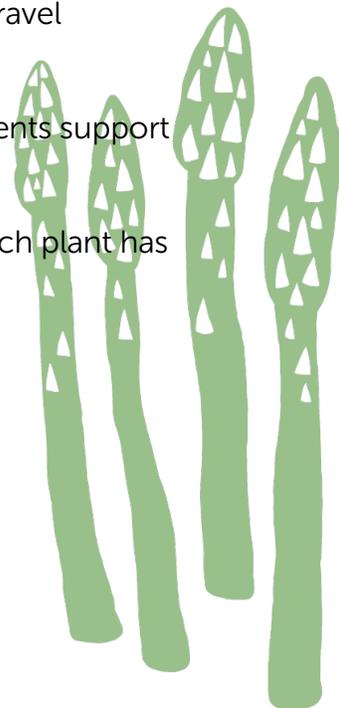
AIR: Carbon dioxide (CO₂) is pulled from the air and converted into glucose (food) through the process of photosynthesis.

WATER: supports photosynthesis and nutrient uptake, and nutrients travel throughout the entire plant via water.

NUTRIENTS: found in the soil and taken up by the plant's roots. Nutrients support healthy plant growth.

SPACE: Roots and leaves need room to grow and spread out, and each plant has their own spacing needs.

Break here if this lesson will be taught in two sections.



Garden Activity

Welcome your students to the Learning Garden and line students up along one side. Stand on the opposite side of the Learning Garden so you can address the entire group. Ask students if they know what they will be doing in the Learning Garden for the day's lesson. Let them know they will be looking for evidence of plant needs being met!

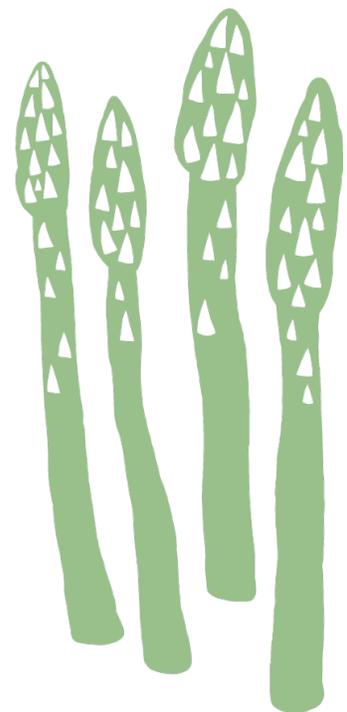
1. Remind your students of the acronym they learned about during the classroom lesson L.A.W.N.S. and review the plant needs associated with each letter.
2. Break students into small groups and distribute the L.A.W.N.S. Scavenger Hunt to each group. Give students enough time to complete the front and back pages of the scavenger hunt.

NOTE: As the teacher, be aware of poisonous plants and other hazards in and around your Learning Garden and review those concerns with your students. Review any additional rules of the Learning Garden. Ask students about known bee/wasp sting allergies before going into the Learning Garden.

Conclusion

Have students share out key parts of today's activity and review the Key Understandings for this lesson. Ask each group to share what plants they said had all their needs met and which plants did not. There might be some overlap. If so, ask students to explain the words that make up L.A.W.N.S. and they each contribute to plants survival.

Students should clean up the Learning Garden as needed.



Names:

Date:

L.A.W.N.S Scavenger Hunt

In your group, hunt for evidence of healthy and strong plants.

STEP ONE: In each box fill in the correct plant need for each letter in the acronym L.A.W.N.S.

STEP TWO: Hunt for evidence of plant needs, sketch and/or describe each piece of evidence.

STEP THREE: When finished with the front page, complete the back page.

L stands for:

Learning Garden Evidence:

A stands for:

Learning Garden Evidence:

W stands for:

Learning Garden Evidence:

N stands for:

Learning Garden Evidence:

S stands for:

Learning Garden Evidence:

L.A.W.N.S. Scavenger Hunt

In your group, hunt for a plant that does and a plant that does not have all its needs met.

Sketch of plant #1 that has all needs met

Sketch of plant #2 that doesn't have all needs met

Describe the evidence observed that explains why plant #1 has all needs met.

Describe the evidence observed that explains why plant #2 doesn't have all needs met.