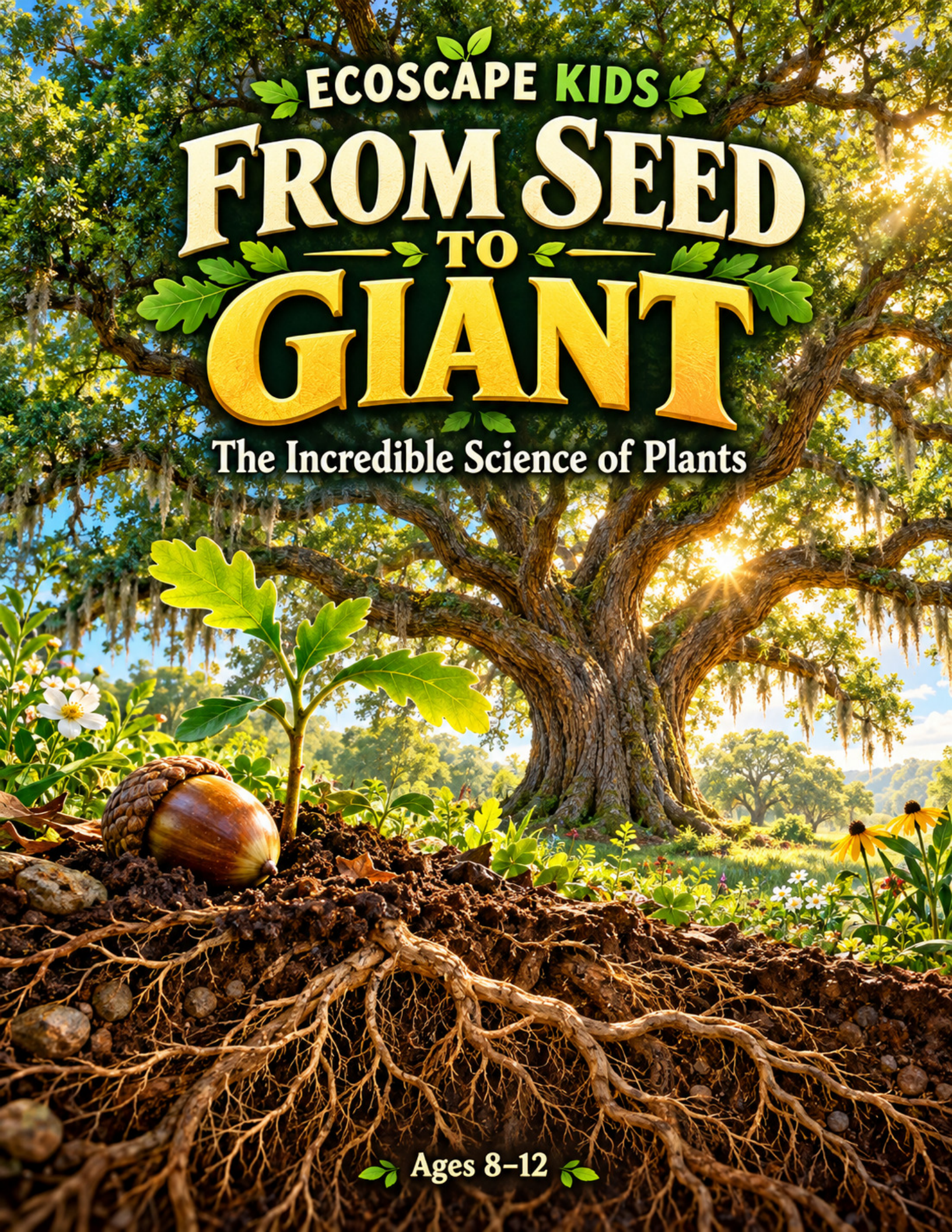

ECOSCAPE KIDS
FROM SEED TO GIANT
The Incredible Science of Plants
Ages 8–12

A Small Beginning.
A Remarkable Living World.

A plant-science journey for curious readers ages 8–12.

FOLLOW THE CONNECTIONS

Meet the embryo inside a seed. Travel through roots and stems, into leaves and flowers, and onward to fruits and another generation. The same basic processes support a tiny seedling and a towering tree.

MANY PLANTS. MANY EXAMPLES.

Beans make seed structures easier to see. Flowers, cacti, oaks, redwoods, and other plants reveal different ways to grow and survive. This book includes Florida examples and plants from other places.

A CLOSER LOOK AT SCIENCE

Learn how plants make sugars, move water, use energy, reproduce, and interact with other living things. A glossary explains important words. Sources and a traditional alphabetical index appear at the back.

EXPLORE WITH CARE

Look without tasting. Never eat unknown seeds, leaves, fruits, sap, or mushrooms. Ask a trusted adult before handling unfamiliar plants. Adults handle tools, chemicals, and heavy garden work.

ABOUT THE ART

These are conceptual illustrations, not photographs. Organisms and details are not shown to scale. The diagrams simplify processes without showing every reaction or species variation.

Ecoscape Kids • Ecoscape Outdoor Services, LLC
Tampa, Florida • Sources reviewed October 2026

The Journey Ahead

Start with a seed. Follow the science all the way to a giant.

- Inside a Seed 1
- The Moment Growth Begins 2
- The Hidden Root World 3
- Soil Is Full of Life 4
- Stems: Support and Delivery 5
- Water’s Journey Through a Plant 6
- A Leaf’s Busy Green World 7
- Plants Make Their Own Food 8
- Plants Need Energy, Too 9
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INSIDE A SEED

A small package with a remarkable beginning.



THE SEED COAT

A seed's outer covering helps protect the living tissues inside from injury and drying out.

THE EMBRYO

This is the young plant. Its tiny root and shoot will develop as the seed germinates. The embryo also includes one or more seed leaves called cotyledons.



FOOD FOR THE FIRST STEPS

A bean's two thick cotyledons store energy and nutrients. They support early growth before the seedling's leaves make enough food through photosynthesis.

SEEDS ARE NOT ALL ALIKE

Corn stores much of its food in a tissue called endosperm. Different plants package their food reserves in different ways.



ALIVE, EVEN BEFORE IT SPROUTS

A viable seed contains a living embryo. Some seeds wait for particular conditions before they germinate.

VIABLE means able to grow into a new plant under suitable conditions.

Conceptual illustrations • Not to scale

Sources 1, 2 (pp. 29–30) • Conceptual illustrations, not to scale.

THE MOMENT GROWTH BEGINS

Germination turns a seed into a growing seedling.



WATER STARTS THE CHANGE

The seed absorbs water and swells. Its living tissues become more active, and stored food helps power new growth.

OXYGEN AND TEMPERATURE MATTER

The growing embryo needs oxygen to release energy from stored food. Each kind of seed also needs a suitable temperature range.

THE LEAVES TAKE OVER

As the shoot grows and green leaves open, photosynthesis supplies more of the plant's food. The seedling gradually relies less on its stored reserves.

ROOT FIRST, THEN SHOOT

In a bean, the first root usually emerges before the shoot. The root anchors the seedling and begins taking in water and minerals.

Too much water fills soil's air spaces and reduces the oxygen available to seeds.

DO ALL SEEDS NEED LIGHT TO SPROUT?

No. Some need light, some germinate better in darkness, and others are less sensitive. Different species have different needs.

Sources 3, 4 (pp. 29–30) • Conceptual illustrations, not to scale.



The Hidden Root World

A plant's foundation works mostly out of sight.

HOLD ON TIGHT

Roots help anchor a plant. Branching through the ground gives the plant support as its stem and leaves grow.

TAKE IN THE ESSENTIALS

Young roots and their tiny root hairs absorb water and dissolved mineral nutrients. Those nutrients help build and maintain plant tissues.

DIFFERENT ROOT SYSTEMS

A taproot system has a prominent main root with branches. A fibrous system has many thinner roots. Roots also change with the plant's species and surroundings.

ROOTS NEED AIR

Living root cells use oxygen for respiration. Compacted or waterlogged soil makes it harder for roots to get what they need.

Food is not sucked from soil

Roots take in water and minerals. Most green plants make their own sugars using light energy.

Sources 5 (pp. 29–30) • Conceptual illustrations, not to scale.

SOIL IS FULL OF LIFE

There is much more under your feet than dirt.

A MIXTURE OF INGREDIENTS

Soil contains mineral particles, organic matter, water, air, and living organisms. The spaces between particles matter as much as the particles themselves.

ROOM FOR ROOTS

Roots grow through these spaces. Water moves into them, and air supplies oxygen. Compaction squeezes spaces and can slow root growth.

NATURE'S RECYCLERS

Many bacteria and fungi break down dead material. As decomposition continues, mineral nutrients become available for plants to use again.

NOT ALL SOIL ACTS THE SAME

Sandy soil usually drains quickly. Clay-rich soil often holds more water. Organic matter helps improve the way soil holds water and supports living things.

Soil is a habitat

Healthy roots share their surroundings with countless organisms, including many too small to see without a microscope.

Sources 6 (pp. 29–30) • Conceptual illustrations, not to scale.

STEMS:
SUPPORT AND DELIVERY

From a soft stalk to a giant trunk, stems connect the plant.



HOLD THE LEAVES TOWARD LIGHT

Stems support leaves, flowers, and fruits. Some are soft and flexible. Woody stems become strong branches and trunks.

WATER'S ROUTE

Xylem is tissue that carries water and dissolved minerals, mainly from roots toward the leaves.

SUGAR'S ROUTE

Phloem transports sugars from places that make or release them to places that need or store them. Sugar movement is not simply always downward.

GROWING POINTS

Buds contain young shoots. As shoots grow, new leaves and branches develop. A stem's nodes are places where leaves and buds attach.

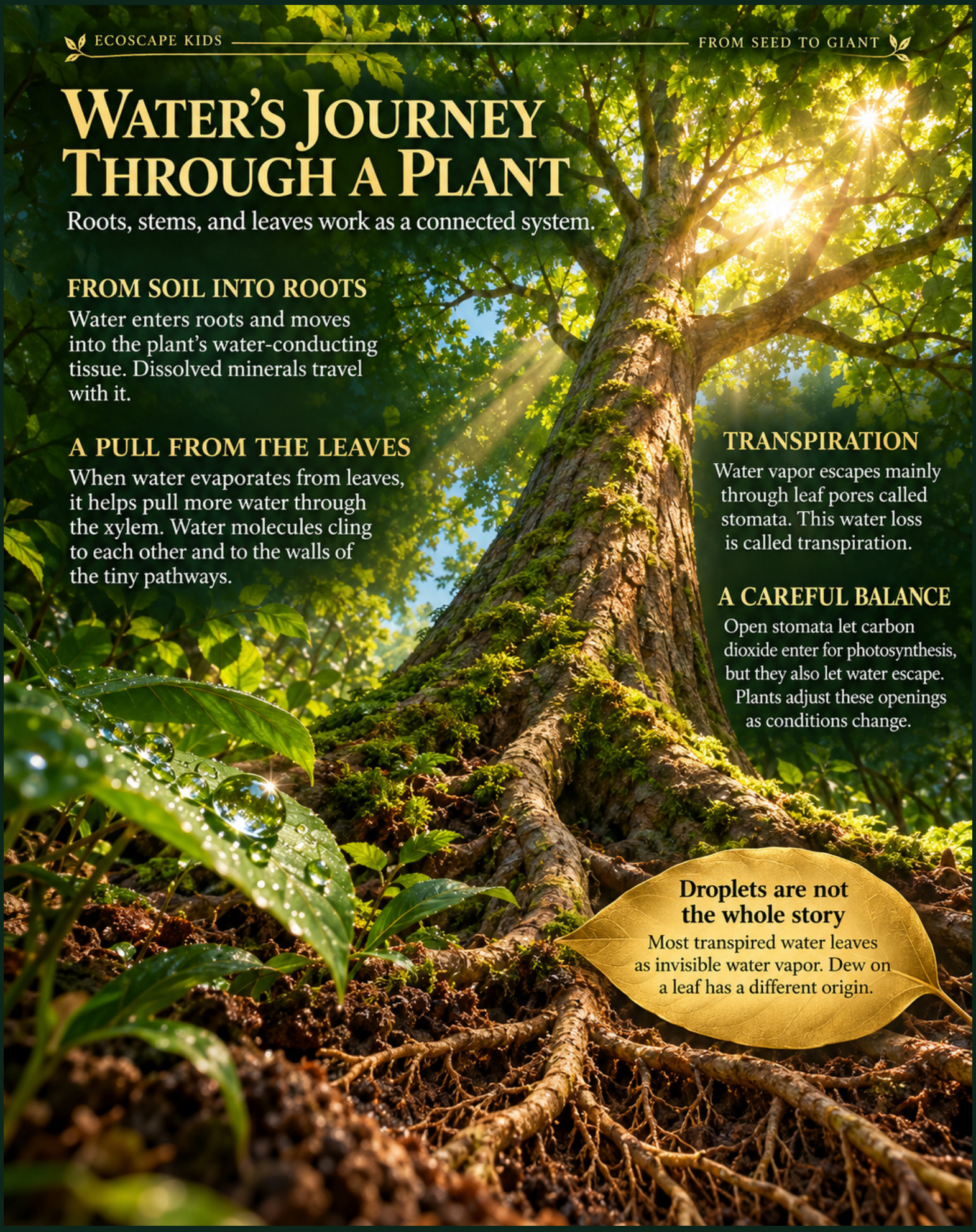
Some stems grow underground

A potato tuber is a swollen underground stem that stores food. It is not a root.

Sources 7, 8 (pp. 29–30) • Conceptual illustrations, not to scale.

Water's Journey Through a Plant

Roots, stems, and leaves work as a connected system.



From Soil Into Roots

Water enters roots and moves into the plant's water-conducting tissue. Dissolved minerals travel with it.

A Pull From the Leaves

When water evaporates from leaves, it helps pull more water through the xylem. Water molecules cling to each other and to the walls of the tiny pathways.

Transpiration

Water vapor escapes mainly through leaf pores called stomata. This water loss is called transpiration.

A Careful Balance

Open stomata let carbon dioxide enter for photosynthesis, but they also let water escape. Plants adjust these openings as conditions change.

Droplets are not the whole story

Most transpired water leaves as invisible water vapor. Dew on a leaf has a different origin.

Sources 9 (pp. 29–30) • Conceptual illustrations, not to scale.

A Leaf's Busy Green World

A thin blade holds an extraordinary living system.

Catch the Light

Many leaves spread a broad surface toward light. Inside their cells, chloroplasts contain chlorophyll, a pigment that captures light energy.

Veins Connect the Leaf

Leaf veins include tissues that deliver water and carry sugars to other parts of the plant. Their pattern also helps support the blade.

Tiny Openings

Stomata let gases move between the leaf and the air. Guard cells help open and close these pores.

Built in Many Shapes

Needles, broad blades, and thick succulent leaves suit different conditions. The shape that works in one habitat might not work in another.

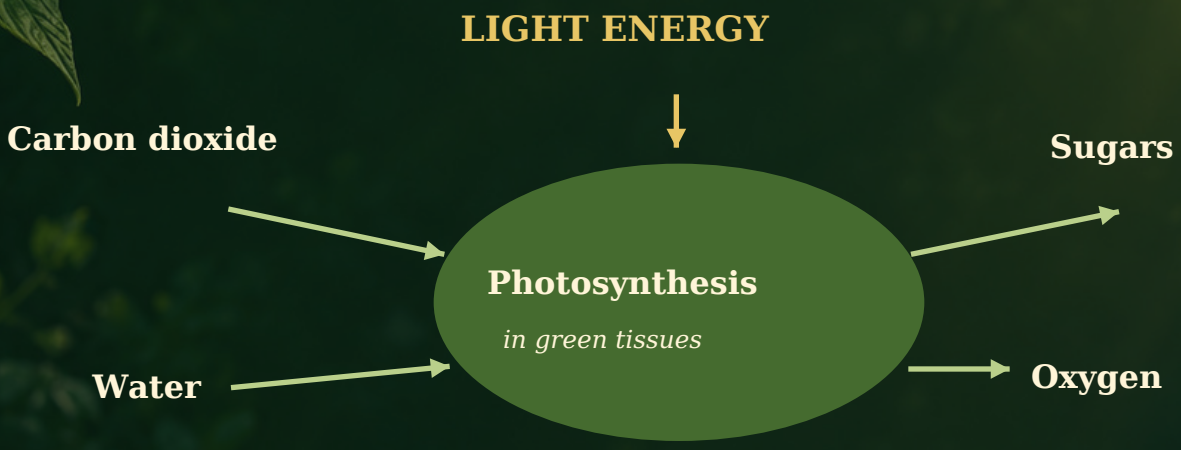
Green is a clue, not a rule

Plants have other pigments too. A red or purple leaf often still contains chlorophyll and performs photosynthesis.

Sources 10 (pp. 29–30) • Conceptual illustrations, not to scale.

Plants Make Their Own Food

Photosynthesis stores light energy in sugars.



A SIMPLIFIED SUMMARY: materials change, energy changes form.

WHERE THE INGREDIENTS COME FROM

Roots supply water. Carbon dioxide enters from the air. Chlorophyll in chloroplasts captures light energy.

A REMARKABLE TRANSFORMATION

Through a series of reactions, the plant uses light energy to make sugars from carbon dioxide and water. Oxygen is released.

WHAT HAPPENS TO THE SUGAR?

The plant uses sugars for respiration, builds materials such as cellulose, or stores energy in forms such as starch.

AIR HELPS BUILD A GIANT

Much of a growing plant’s dry mass comes from carbon dioxide in the air. Soil minerals are essential, but soil is not the main source of that mass.

ENERGY CHANGES FORM

Sunlight supplies energy. It is not a material ingredient that turns directly into a leaf.

Sources 11 (pp. 29–30) • Conceptual illustrations, not to scale.

Plants Need Energy, Too

Photosynthesis and respiration have different jobs.



STORE ENERGY

Photosynthesis uses light energy to build sugars. Green tissues do this when enough suitable light is available.

GROWTH NEEDS BOTH PROCESSES

Photosynthesis supplies much of the plant's stored chemical energy. Respiration helps make that energy available for growth, repair, and transport.

Plants do not breathe like people

They have no lungs. Gases move through openings and tissues, while respiration happens inside living cells.

RELEASE USABLE ENERGY

In cellular respiration, living cells break down sugars and use oxygen to release energy for their work. Carbon dioxide and water are produced.

DAY AND NIGHT

Plant cells respire during both day and night. Roots, shoots, flowers, and other living tissues all need energy.

Sources 12 (pp. 29–30) • Conceptual illustrations, not to scale.

How a Plant Gets Bigger

New cells, larger cells, and specialized tissues build the plant.



GROWING REGIONS

Meristems are regions where cells divide to make new cells. They occur at places such as root tips, shoot tips, and the cambium in woody stems.

BUILD AND STRETCH

New cells grow and take on different roles. Some become leaf tissues, others help move water, and others provide support.

RESPOND TO THE SURROUNDINGS

Shoots often grow toward light. Roots commonly grow in the direction of gravity. These growth responses help a plant use its surroundings.

DIFFERENT GROWTH SPEEDS

Species, age, season, light, temperature, water, and nutrients affect growth. More water or fertilizer does not always mean healthier growth.

Growth is construction

A plant builds new living material. It is not simply stretching the same tiny plant into a larger shape.

Sources 13 (pp. 29–30) • Conceptual illustrations, not to scale.

FLOWERS HAVE A JOB TO DO

A flower is more than a colorful decoration.

REPRODUCTION

Flowers are the reproductive structures of flowering plants. Some are large and showy. Others are small and easy to miss.

POLLEN AND OVULES

Anthers produce pollen. Ovules develop inside an ovary. A flower may contain both kinds of reproductive structures or only one.

PETALS AND VISITORS

Colors, scents, shapes, and nectar help many flowers attract animal visitors. Wind-pollinated flowers often have a less showy appearance.

FROM FLOWER TO SEED

Pollination brings pollen to a receptive stigma. Fertilization happens later, when a sperm cell joins an egg cell inside an ovule.

Pollination is not fertilization

Moving pollen is one step. The joining of reproductive cells is another.

Sources 14 (pp. 29–30) • Conceptual illustrations, not to scale.

The Pollen Delivery Team

Many plants depend on a visitor to move pollen.

A Flower Visit

As a bee or another animal visits a flower, pollen sometimes sticks to its body. On another visit, some reaches a receptive stigma.

Many Kinds of Helpers

Bees, butterflies, moths, flies, beetles, birds, and some bats pollinate plants. The important visitors vary with the plant and habitat.

Not Every Delivery Uses an Animal

Wind moves pollen for many grasses and trees. Some flowering plants self-pollinate, while others need pollen from a different compatible plant.

Habitat Makes a Difference

A place with suitable flowers, nesting sites, and shelter supports pollinators through their life cycles. Food alone is not the entire habitat.

A visit is not always a delivery

An animal on a flower does not automatically pollinate it. Pollen must reach the right place on a compatible flower.

Sources 15 (pp. 29–30) • Conceptual illustrations, not to scale.

From Flower to Fruit

Seeds and fruits develop after reproduction succeeds.

THE OVULE BECOMES A SEED

After fertilization, a fertilized ovule develops into a seed containing a new embryo. Its tissues provide protection and support.

THE OVARY BECOMES FRUIT

In flowering plants, the ovary usually develops into the fruit. In some fruits, other flower tissues contribute too.

FRUIT IS A BOTANICAL WORD

Tomatoes, peppers, cucumbers, and green beans are fruits in botany, even when we call them vegetables in cooking.

NOT ALWAYS SWEET OR JUICY

Some fruits are dry, including many pods and nuts. A fruit's structure often helps protect seeds or helps them travel.



Seeds and fruit are different parts

The seed holds the young plant. A fruit develops around one or more seeds in a flowering plant.

Sources 16 (pp. 29–30) • Conceptual illustrations, not to scale.

SEEDS ON THE MOVE

A new plant needs a place where it has a chance to grow.

RIDE THE WIND

Some seeds or fruits have wings or silky hairs. Moving air carries them away from the parent plant.

TRAVEL WITH ANIMALS

Birds and other animals move seeds after eating fruit. Squirrels bury nuts, and some buried seeds are never retrieved.

FLOAT OR HITCHHIKE

Some seeds or fruits travel in water. Others have hooks that catch on fur or clothing.

A BUILT-IN LAUNCH

Certain plants release seeds when dry fruits split or spring open. Different dispersal methods suit different species and places.



Travel is only the beginning

A seed still needs suitable conditions to germinate and survive. Many dispersed seeds never become adult plants.

Sources 17 (pp. 29–30) • Conceptual illustrations, not to scale.

The Flowering Plant Life Cycle

One generation makes the seeds for another.

1

Seed

An embryo is protected inside a seed with stored reserves.

2

Germination and seedling

Suitable conditions allow growth to begin. Roots and shoots develop, and green leaves start making food.

3

Mature plant

The plant grows and eventually reaches reproductive maturity.

4

Flowers and fertilization

Pollen reaches a compatible stigma. Successful fertilization produces a new embryo inside a developing seed.

5

Fruits and seeds

Seeds mature as fruits develop. Dispersal moves some to new places, and another generation begins.

Dispersal brings seeds to new places.

THIS CYCLE DESCRIBES FLOWERING PLANTS

Pines and cycads make seeds without flowers or fruits. Ferns and mosses reproduce using spores.

Sources 4, 14 (pp. 29–30) • Conceptual illustrations, not to scale.

New Plants Without Seeds

Some plants make new plants from existing parts.



RUNNERS SPREAD OUTWARD

Strawberries send slender stems along the ground. New plantlets develop where those stems take root.

A clone is a genetic match

Cloned plants share inherited traits, but different surroundings still affect how each one grows. Adults handle cutting tools.

CUTTINGS FORM NEW ROOTS

Gardeners reproduce some plants from pieces of stem, leaf, or root. Success depends on the species and the piece used.

STORED GROWTH UNDERGROUND

A potato tuber is a swollen stem. Its buds, often called eyes, grow into new shoots under suitable conditions.

A DIFFERENT KIND OF REPRODUCTION

Vegetative reproduction does not involve fertilization. The new plant is usually genetically the same as its parent, apart from occasional changes.

Sources 4, 18 (pp. 29–30) • Conceptual illustrations, not to scale.

Building a Wooden Giant

A tree adds length at growing tips and width beneath the bark.

Reach upward and outward

Shoots extend as buds open and grow. A branch does not get taller by sliding up the trunk.

Add new wood

In many woody plants, a thin growing layer called the vascular cambium produces new wood toward the inside and new phloem toward the outside.

A record in the trunk

Seasonal changes in growth often create visible rings. In many seasonal climates, one ring represents a year, but false or missing rings can complicate the story.

Strength and living tissues

Much mature wood consists of cells that no longer live. Living tissues near the outside and in other parts of the tree keep it growing and functioning.

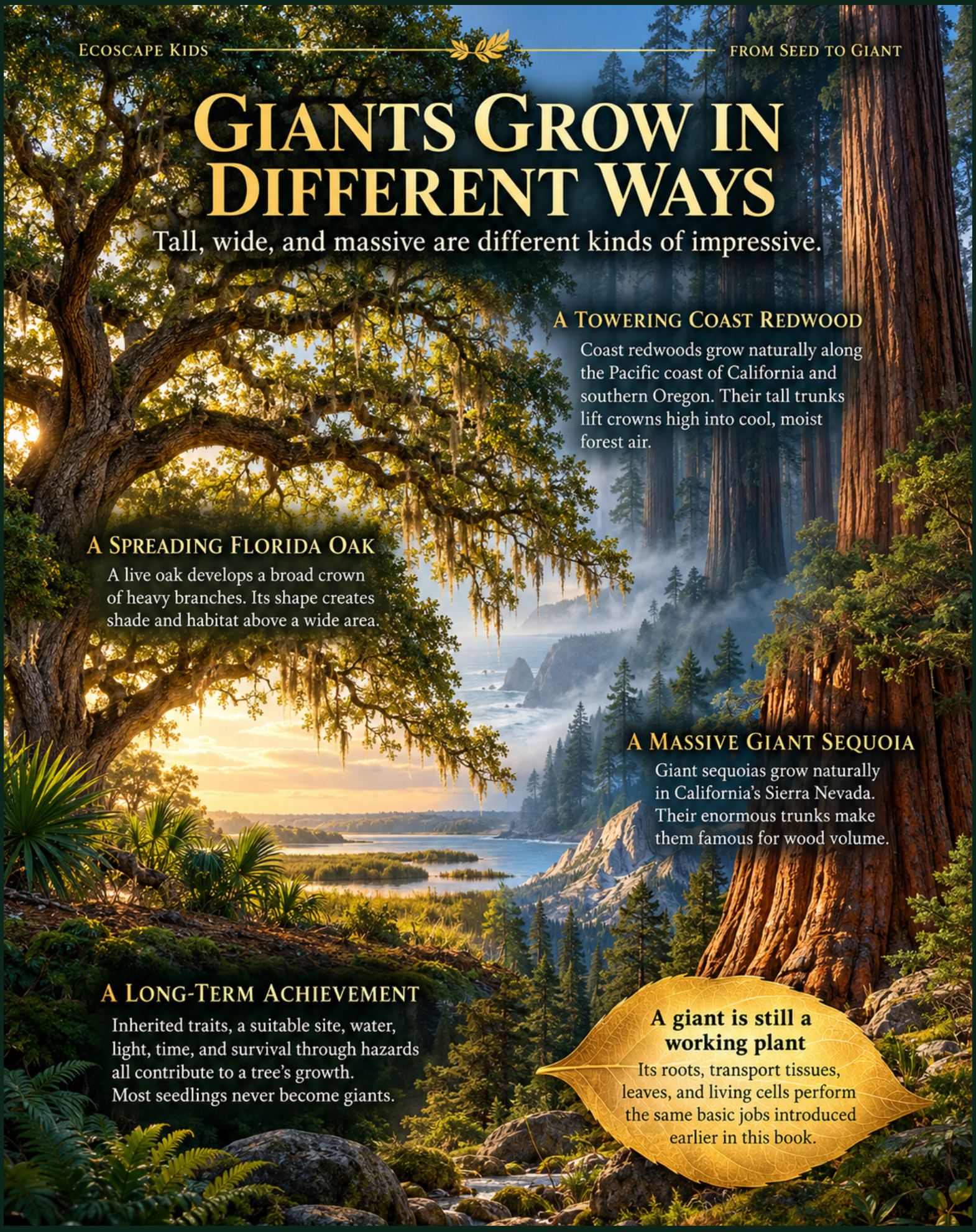
Not every tree has a simple ring clock

Species and climate affect ring formation. Scientists study the pattern carefully instead of assuming every visible line equals one year.

Sources 8, 19, 20 (pp. 29–30) • Conceptual illustrations, not to scale.

GIANTS GROW IN DIFFERENT WAYS

Tall, wide, and massive are different kinds of impressive.



A TOWERING COAST REDWOOD

Coast redwoods grow naturally along the Pacific coast of California and southern Oregon. Their tall trunks lift crowns high into cool, moist forest air.

A SPREADING FLORIDA OAK

A live oak develops a broad crown of heavy branches. Its shape creates shade and habitat above a wide area.

A MASSIVE GIANT SEQUOIA

Giant sequoias grow naturally in California's Sierra Nevada. Their enormous trunks make them famous for wood volume.

A LONG-TERM ACHIEVEMENT

Inherited traits, a suitable site, water, light, time, and survival through hazards all contribute to a tree's growth. Most seedlings never become giants.

A giant is still a working plant

Its roots, transport tissues, leaves, and living cells perform the same basic jobs introduced earlier in this book.

Sources 21 (pp. 29–30) • Conceptual illustrations, not to scale.

Plants Built For Tough Places

Adaptations help species survive in particular environments.



Save Water

Many cacti store water in thick stems. Waxy surfaces and reduced leaves help limit water loss in dry habitats.

Handle a Salty Shore

Mangroves have adaptations that help them cope with salty, wet ground. Different mangrove species manage salt in different ways.

Find Nutrients in a Poor Soil

Pitcher plants and sundews trap small animals to obtain mineral nutrients. They still use photosynthesis to make sugars.

Plants do not choose new traits

Adaptations are inherited features shaped across generations. An individual plant also responds to conditions during its own life.

Fit the Habitat

An adaptation helps in a particular setting. A desert plant does not automatically thrive in a wet garden, and a wetland plant does not belong in dry sand.

Sources 22, 23, 24 (pp. 29–30) • Conceptual illustrations, not to scale.

How Plants Protect Themselves

Staying in one place does not mean being defenseless.

Physical Barriers

Tough leaves, bark, spines, and other structures make some plants harder to eat or damage.

Chemical Defenses

Plants produce many chemicals. Some discourage feeding or interfere with an animal's digestion. Others help defend against organisms that cause disease.

Living Relationships

Some insects have evolved ways to feed on plants with strong defenses. A plant that discourages one eater might be a food source for another.

A Balanced View

Leaf holes do not always mean a plant is failing. Some feeding supports a healthy food web, while severe damage sometimes needs attention.

Look without tasting

Never taste unknown leaves, berries, seeds, sap, or mushrooms. Some plants irritate skin too. A trusted adult should identify plants before handling.

Sources 25 (pp. 29–30) • Conceptual illustrations, not to scale.

Partners Beneath the Surface

Roots share the soil with a busy community.

Fungi are not plants

Fungi form their own group of living things. They do not use chlorophyll to make food through photosynthesis.

A helpful exchange

Many plants form partnerships with mycorrhizal fungi. The plant provides carbon compounds, while fungal threads help obtain water and mineral nutrients.

Recycling dead material

Other fungi and many bacteria decompose leaves, wood, and other remains. This helps recycle nutrients through the ecosystem.

Many roles in one habitat

Not every soil organism helps a plant. Some cause disease, while others are neutral or beneficial. Their effects depend on the species and conditions.

Different jobs, different organisms

A mushroom is only the visible fruiting structure of certain fungi. Much of the fungus remains hidden in its surroundings.

Sources 26, 27 (pp. 29–30) • Conceptual illustrations, not to scale.

Plants Support a Living World

Food, shelter, and recycled nutrients link many organisms.

Start with Producers

Most green plants capture light energy and store it in sugars. They form the base of many land food webs.

Energy Moves Through Feeding

A caterpillar eats leaves. A bird eats insects. Each feeding connection transfers some energy and matter to another organism.

A Web, Not One Straight Line

An animal often eats several kinds of food and has more than one predator. Real ecosystems contain many connected relationships.

Habitat Counts Too

Plants provide nest sites, hiding places, shade, and surfaces to live on. Their roots also help hold soil in place.

Matter cycles. Energy flows.
Decomposers recycle nutrients from remains. Energy enters many ecosystems as sunlight and eventually leaves as heat.

Sources 28 (pp. 29–30) • Conceptual illustrations, not to scale.

The Plants in Everyday Life

People rely on plants far beyond the garden.

Food from Many Parts

Carrots are roots, lettuce is leaves, and broccoli includes flower buds. Tomatoes are fruits, while beans and grains provide edible seeds.

Useful Materials

Wood supports buildings and furniture. Plant fibers help make paper, cloth, and rope. Cotton fibers grow from the surface of cotton seeds.

Cooling and Comfort

Tree shade reduces direct sunlight on people and surfaces. Plant water loss also helps cool the surrounding environment.

Care for the Source

Farms, forests, and gardens need healthy soil and water. How people grow, harvest, and protect plants affects ecosystems and communities.

Fertilizer is not plant sugar

Fertilizers supply mineral nutrients. Plants still need suitable light and conditions to make their own food.



Sources 29, 30, 31 (pp. 29–30) • Conceptual illustrations, not to scale.

Florida's Plant Neighborhoods

Native plants help tell the story of a place.

What Native means

A native plant occurs naturally in a region, rather than arriving through human introduction. Florida has many habitats, each with its own plant communities.

A Live Oak community

Oak leaves, acorns, branches, bark, and roots support different living things. A single mature tree provides many kinds of habitat.

Small Plants Matter Too

Native wildflowers, grasses, and shrubs add flowers, seeds, cover, and seasonal variety beneath and around trees.

Choose the Right Fit

Native does not mean every native plant belongs in every yard. Soil, sun, moisture, space, and local climate still matter.

Look beyond the lawn

A landscape with different plant layers offers more kinds of food and shelter than one uniform surface.

Sources 32, 33 (pp. 29–30) • Conceptual illustrations, not to scale.

Seasons and Life Spans

Plants follow different schedules.

Annuals

An annual completes its life cycle, from germination to seed production, within one growing season.

Biennials

A biennial typically grows leaves and roots during one season, then flowers and produces seed during the next.

Perennials

Perennials live for more than two years. Some keep woody stems. Others lose their aboveground growth and return from surviving parts.

Reading the Environment

Temperature, water, day length, and the length of the night influence many plants. In Florida, wet and dry periods also shape growth, and timing varies by region.

Evergreen does not mean never changing

Evergreen plants keep foliage through the year, but individual leaves still age, fall, and are replaced.

Sources 34 (pp. 29–30) • Conceptual illustrations, not to scale.

WHAT HEALTHY PLANTS NEED

Good care matches the plant to its surroundings.

THE RIGHT LIGHT AND SPACE

A sun-loving plant and a shade-adapted plant have different needs. A small seedling also needs room for its mature roots and crown.

WATER WITH PURPOSE

Roots need both moisture and oxygen. Too little water causes stress, while too much sometimes keeps the soil waterlogged.

NUTRIENTS IN BALANCE

A missing essential nutrient limits growth, but extra fertilizer is not a cure for every problem. Adults use soil information and reliable guidance before adding products.

PROTECT THE LIVING SYSTEM

Healthy soil, appropriate mulch, and careful planting support roots. Adults handle sharp tools, heavy work, fertilizers, and pest-control products.



Every giant started small

Growth depends on many connected processes. A seed becomes a successful plant when its inherited abilities meet suitable conditions.

Sources 35, 36 (pp. 29–30) • Conceptual illustrations, not to scale.

The Language of Plants

Adaptation to Germination • Plain-language definitions

Adaptation
An inherited feature that helps a species survive in its environment.

Annual
A plant that completes its life cycle in one growing season.

Biennial
A plant that typically completes its life cycle in two growing seasons.

Bud
A young, undeveloped shoot or flower.

Cambium
A growing tissue that adds width to many woody stems and roots.

Carbon dioxide
A gas that supplies carbon for photosynthesis.

Cell
A basic living unit that builds a plant or another organism.

Cellulose
A strong carbohydrate that helps form plant cell walls.

Chlorophyll
A pigment that captures light energy for photosynthesis.

Chloroplast
A structure inside plant cells where photosynthesis takes place.

Clone
An organism genetically matching its parent, apart from possible mutations.

Cotyledon
A seed leaf that is part of a plant embryo.

Decomposer
An organism that breaks down dead material and helps recycle nutrients.

Embryo
The young plant developing inside a seed.

Endosperm
Food-storage tissue found in many seeds.

Evergreen
A plant that keeps some foliage throughout the year.

Fertilization
The joining of a sperm cell and an egg cell.

Fibrous roots
A root system made up of many branching, relatively thin roots.

Fruit
A structure developed from a flower’s ovary, sometimes with other tissues.

Germination
The beginning of active growth that produces a seedling from a seed.

The Language of Plants

Guard cells to Xylem • Plain-language definitions

Guard cells
Cells that control the opening and closing of a stoma.

Habitat
The surroundings that provide an organism with what it needs to live.

Meristem
A plant region where cells divide to produce new cells.

Mineral nutrient
An essential chemical element a plant obtains in mineral form.

Mycorrhiza
A partnership between a plant’s roots and a fungus.

Native plant
A plant occurring naturally in a region, without human introduction.

Ovule
A structure inside a flower’s ovary that can develop into a seed.

Perennial
A plant that lives for more than two years.

Phloem
Plant tissue that transports sugars and other substances.

Photosynthesis
The process that uses light energy to build sugars from carbon dioxide and water.

Pollination
The transfer of pollen to a receptive stigma in a flowering plant.

Producer
An organism that makes organic food from inorganic materials.

Respiration
Cell processes that release usable energy from sugars and other compounds.

Seed coat
A protective outer covering of a seed.

Spore
A reproductive cell that develops without being enclosed in a seed.

Stomata
Small pores that allow gas exchange. One pore is a stoma.

Taproot
A prominent main root with smaller roots branching from it.

Transpiration
The loss of water vapor from a plant, mainly through leaves.

Viable
Able to grow into a new plant under suitable conditions.

Xylem
Plant tissue that carries water and dissolved minerals.

Sources & Further Learning

Open a linked title with a trusted adult.

01 **Seed morphology**
University of Minnesota • Pages 1

02 **Seeds and stored reserves**
UF/IFAS • Pages 1

03 **Seed physiology**
University of Minnesota • Pages 2

04 **Propagation**
NC State Extension • Pages 2, 15, 16

05 **Roots**
University of Minnesota • Pages 3

06 **Healthy soil in your garden**
University of Minnesota Extension • Pages 4

07 **Shoots**
University of Minnesota • Pages 5

08 **Inside stems**
University of Minnesota • Pages 5, 17

09 **Plants and water**
University of Minnesota • Pages 6

10 **Inside leaves**
University of Minnesota • Pages 7

11 **Light and photosynthesis**
University of Minnesota • Pages 8

12 **Plant growth and development**
Oregon State University Extension • Pages 9

13 **Meristems and new growth**
University of Minnesota • Pages 10

14 **Flower morphology**
University of Minnesota • Pages 11, 15

15 **Pollination**
UF/IFAS • Pages 12

16 **Fruit morphology**
University of Minnesota • Pages 13

17 **Plant adaptations and seed dispersal**
National Park Service • Pages 14

18 **Layering and runners**
UF/IFAS • Pages 16

Source links reviewed October 2026. These organizations do not endorse the book.

Concepts are simplified for ages 8–12. Read the sources for further detail.

Sources & Further Learning

Open a linked title with a trusted adult.

19 **How trees grow**
Texas A&M Forest Service • Pages 17

20 **Dendrochronology**
National Park Service • Pages 17

21 **Giant sequoias and coast redwoods**
National Park Service • Pages 18

22 **Mangrove adaptations**
Florida Museum, University of Florida • Pages 19

23 **Cacti and desert succulents**
National Park Service • Pages 19

24 **Carnivorous plants**
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26 **Mycorrhiza: a plant-fungus partnership**
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27 **Forest mycology**
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28 **Food webs and energy flow**
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29 **Plant parts we eat**
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30 **Cotton fiber development**
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31 **Benefits of trees and vegetation**
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32 **Native plants**
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33 **Native coreopsis**
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34 **Annuals, perennials, and bulbs**
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35 **Right plant, right place**
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36 **Essential nutrients for plants**
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Source links reviewed October 2026. These organizations do not endorse the book.

Concepts are simplified for ages 8–12. Read the sources for further detail.

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