

WATERMELON MAGIC



Educator's Guide

The Science of Growing. A Story of Sharing.

Watermelon Magic features Sylvie and her summer on the farm, but the real stars of the movie are the watermelons!



*Our entire food source
relies on a complex and
interdependent web of soil,
sunshine, water, plants,
animals and insects.*

*Watermelon Magic zooms
into the life cycle of the
watermelon, illuminates
the distinct stages of plant
growth from seed to fruit,
and invites viewers to
connect with both the
science and marvel of
plant life.*



The watermelons begin as **seeds**, saved and stored from the year before, then gently pressed into the seed tray in the greenhouse. Nurtured with water, sunshine, and nutrients from the healthy soil, plus a little time and patience, the seeds **germinate** and sprout before Sylvie's eyes. As the shoots develop, their **true leaves** emerge to soak in more light.



One day, Sylvie is shocked to find that her baby plants have been moved; they have become **seedlings**, and are ready to be planted outside. Sylvie and her mother transplant them into the soil, making sure to provide plenty of water to the small plants. As the plants get bigger, Sylvie realizes that they need more protection. She builds a fence to keep out curious animals, including baby brothers!



The vines crawl and ramble as they spread out, using **tendrils** to expand their reach toward the sun. At last, buds open, and flowers develop on the vines.

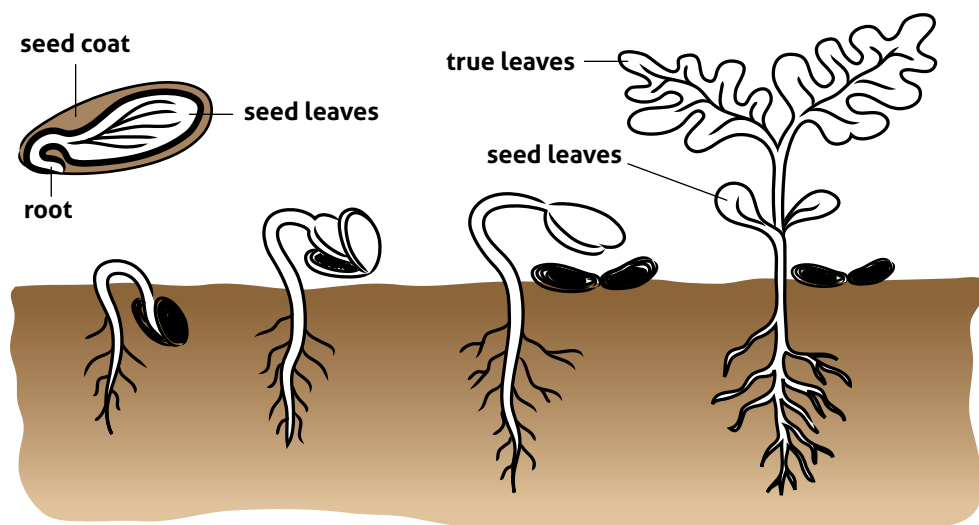


Bees and other **beneficial insects** visit these flowers, drinking **nectar** and **pollinating** as they go. Once the plants are pollinated, the fruit begins to develop, and after many days of growth, the watermelons swell to fruition.



Sylvie is amazed to find that her watermelons have ripened on the vine, and she carefully **harvests** them. When she and her family enjoy the healthy and delicious home-grown treat, they complete the cycle of the watermelon's life, and continue it by saving the seeds of the fruit for next year's crop.

Vocabulary



seed – A miniature plant with a protective cover, made within a pollinated flower. All seeds contain a baby plant inside, ready to grow into the same kind of plant that made it.

germinate – To grow. A seed that is on or in the soil and gets softened by water will break open its outer coat and begin to grow, or germinate.

seed leaves (cotyledons) – The first very small leaf or one of the first pair of leaves developed by the seed plant. The tiny leaves, the root, and food for the baby plant are all contained within the seed under the seed coat.

true leaves – The leaves that appear and grow after the seed leaves (or cotyledons). These new leaves make food for the plant using sunlight, water, air, and minerals in the soil carried up by the roots and stem.

seedling – A young plant that has grown its roots (down) and its shoot and leaves (up) from a seed.

tendrils – A specialized, twisting, threadlike part of a leaf or stem that attaches climbing plants (like watermelons) to a support by twining or adhering.

beneficial insect – Any insect that improves the soil, pollinates plants, or controls harmful pests.

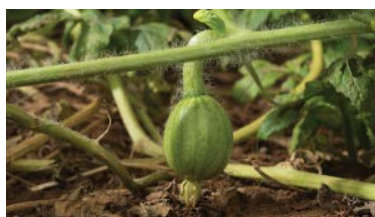
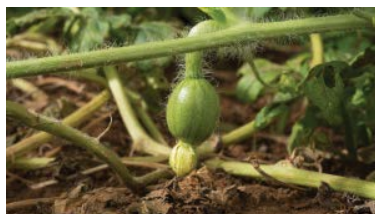
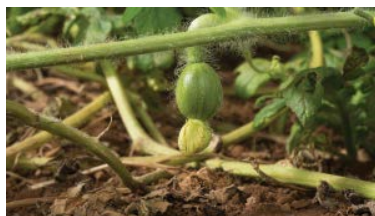
nectar – A sweet liquid made by flowers of various plants, consumed by pollinators such as hummingbirds and insects, and gathered by bees for making honey.

pollen – A powder-like, yellow dust, made by the stamens of the flower, that helps make seeds.

pollination – The transfer of a grain of pollen from the stamen of the flower to the pistil of the same flower, or to the pistil of the same kind of flower. Wind, birds, and insects (especially bees) all help to pollinate the flowers and make new seeds.

harvest – To gather, bring in, pick, reap, or collect a ripened crop.

seed saving – The age-old practice of collecting seeds or tubers from existing healthy crops or plants to provide seeds for next year's farms and gardens.



Grow

Anatomy of a Watermelon Plant

Label the following:

root

stem

male flower

female flower

leaf

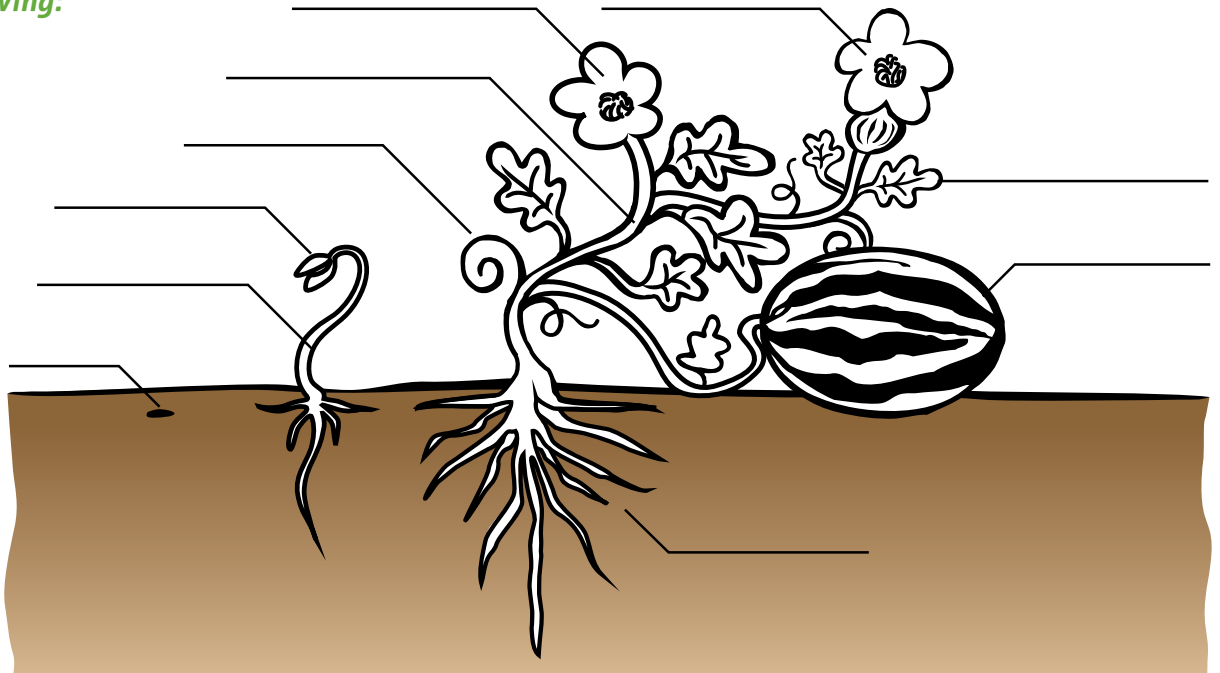
tendrils

seed

seed leaves

fruit

vine



We need bees!



Honeybees and many other insects help us by pollinating the flowering plants, which become the fruits we eat. The bees' furry bodies pick up pollen grains as they sip nectar from the flowers.

These tiny pollen grains rub off onto the next flower the bee visits. A flower must be pollinated before it can grow fruit.

Fruits contain seeds that can be planted for next year's harvest.



The plants in
Watermelon
Magic move!

How did they do that?

All living things move. Plants move at a much slower rate than humans or other animals, so we may not notice as they crawl up a fence, ramble along the ground, and reach for the sunlight.

Most watermelons have a 80-90 day life cycle from seed to fruit. In *Watermelon Magic*, we see the growth process sped up through time-lapse photography. The filmmakers took more than 200,000 photos of the plants to create the shots that we see in the movie. Images of the watermelon seedlings sprouting in their trays took place over only a few hours, while the fruit swelling shots took place over several weeks!

You try it!



Plant a seed in soil, give it water, sunshine and air, and **observe** as it grows over many days. **Record** what you notice with drawings, words, and measurements! Some fast growing seeds that are perfect for your experiment include Lima beans, sunflower seeds, and marigold seeds.

Harvest



Plant a Watermelon Patch!

1. Sylvie and her mom plant four rows of watermelon seedlings in her garden. If each row has ten seedlings, how many watermelon plants are there in all? (Draw or explain how you know.)

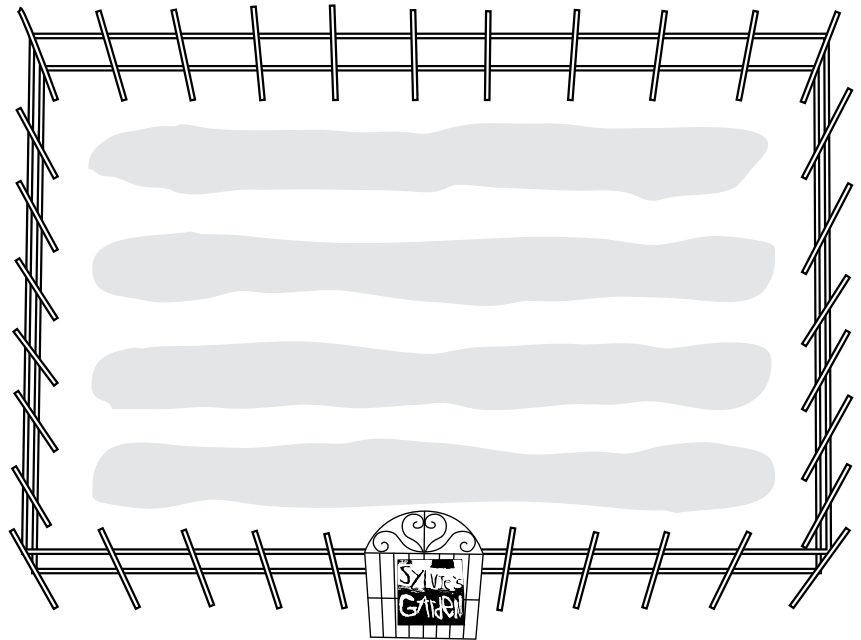
2. Two of the rows are planted with the smaller Moon & Stars variety of watermelons. Each plant grows three fruits on its vine. The other two rows are planted with the larger Crimson Sweet variety. Each plant grows just two fruits on its vine.

- How many smaller Moon & Stars watermelons did Sylvie grow? _____
- How many larger Crimson Sweet watermelons did Sylvie grow? _____
- How many watermelons did she harvest altogether? _____



- **Crimson Sweet**
grow two per vine

- **Moon & Stars**
grow three per vine



Read Sylvie's Farmers Market Sign.

3. If Sylvie sells 20 Moon & Stars watermelons, how much money will she collect? _____
4. If Sylvie sells 12 Crimson Sweet watermelons, how much money will she collect? _____
5. How many watermelons will she sell altogether? _____
6. How much money will she collect in all? _____

Did you know? There are over 1200 varieties of watermelon! Each kind may be different in size, markings, flesh color, number of seeds, and sweetness.



Eat

Fruits and Vegetables Have Various Edible Parts.

Brainstorm the different parts of plants that you like to eat and fill in the chart.

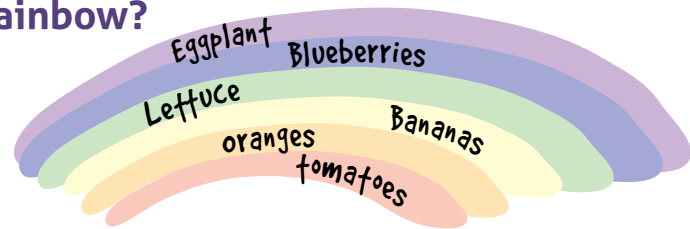


Roots & Tubers	Stems	Leaves	Flowers	Fruit	Seeds
Carrots	Celery	Kale	Broccoli	Watermelon	Sunflower

Where do your favorite foods fit on the rainbow?

Fresh, richly colored produce is filled with vitamins, minerals, fiber, and other nutrients that keep you healthy!

Eat a rainbow of fruits and vegetables!

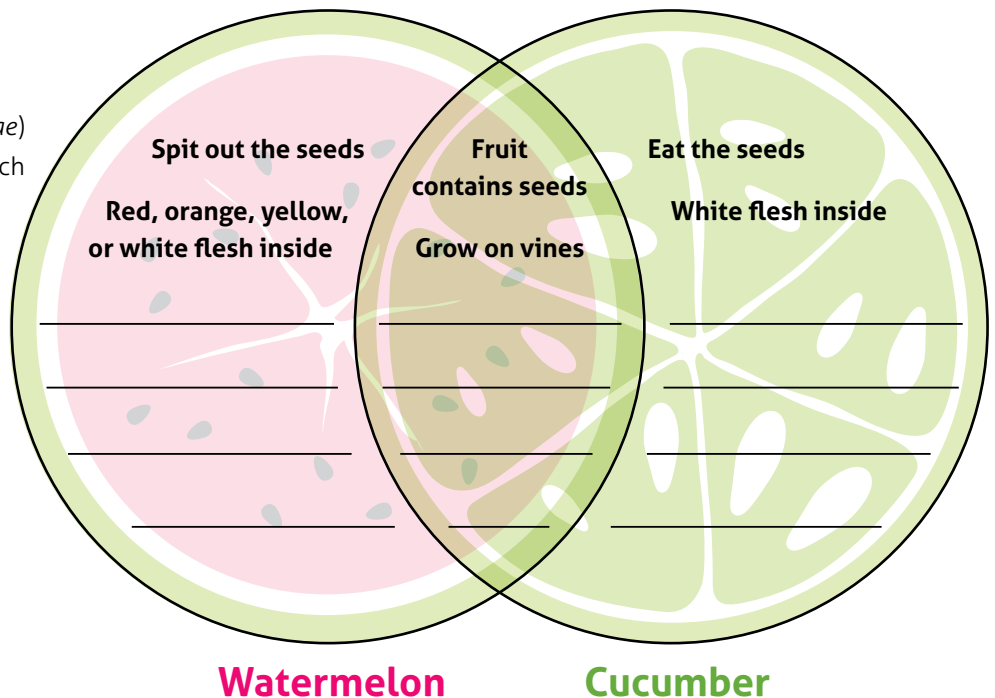


Compare & Contrast

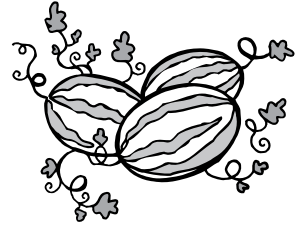
Compare Sylvie's favorite fruits on the Venn diagram below. Fill in the center with what both fruits have in common, and list properties (such as color, shape, taste) unique to each.

Sylvie's two favorite fruits are watermelon and cucumbers. Both are in the same family (*Cucurbitaceae*) along with pumpkins, and share much in common.

Watermelon can be considered both a fruit and a vegetable. Botanists (scientists who study plants) define fruit as something that grows from a flower and contains seeds inside. Many farmers consider any plant grown for food a vegetable.



Learn



Books for Families

Aston, Dianna Hutts and Sylvia Long, [A Seed is Sleepy](#). San Francisco: Chronicle Books, 2007.

Bunting, Eve, [Sunflower House](#). California: Voyager Books, 1999.

Cherry, Lynne, [How Groundhog's Garden Grew](#). New York: The Blue Sky Press, 2003.

Ehlert, Lois, [Growing Vegetable Soup](#). California: Voyager Books, 1987.

Fowler, Allan, [From Seed to Plant, Rookie Read-About Science](#). Danbury, Connecticut: Children's Press, a Division of Grolier Publishing Co., 2001.

Gibbons, Gail, [From Seed to Plant](#). New York: Holiday House, 1991.

Hickman, Pamela and Heather Collins, [A Seed Grows, My First Look at a Plant's Life Cycle](#). Toronto: Kids Can Press Ltd., 1997.

Houben, Lolo, [One Magic Square: The Easy, Organic Way to Grow Your Own Food in a Three Foot Square](#). New York: The Experiment LLC, 2010.

Woodward, Martha Rose, [Watermelon for Everyone](#). Charleston, SC and Seattle, WA: Amazon CreateSpace, 2013.

Books For Educators

National Science Resources Center/ Science and Technology for Children, [Plant Growth and Development Teacher's Guide](#). Smithsonian Institution-National Academy of Sciences. Burlington, NC: Carolina Biological Supply Company, 1991.

Moore, Jo Ellen, [Plants: Science Works for Kids Series](#). Grades 1-3 Activities, lessons and resources. Monterey, CA: EvanMoor Educational Publishers, 1998.

Online Resources

[edibleschoolyard.org](#)

[greenerpartners.org](#)

[kidsgardening.org](#)

[kgi.org](#) – Kitchen Gardeners International

[letsmove.gov](#) – *Let's Move Campaign*

[letsmoveschools.org](#) – *Let's Move School Sign-up*

[ssec.si.edu](#) – Smithsonian Science Education Center

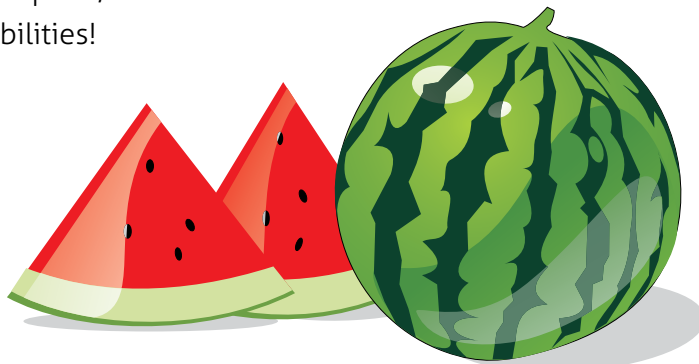
[watermelon.org](#) – National Watermelon Association

For more resources, activities and lesson plans, visit the official film site:

[WatermelonMagic.com](#)

Did you know?

Watermelon with red flesh contains plenty of Vitamins A, C, B₆, and Lycopene, which has powerful antioxidant capabilities!



Watermelon Magic, this Educator's Guide, and our online resources have been designed to develop scientific reasoning skills for K-5 audiences. The science, math, and language arts skills herein align with those specified by the Next Generation Science Standards, National Common Core Standards, and the National Science Resources Center's STC Curriculum.

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NSRC Curriculum Connections

Young people will develop the following scientific reasoning skills:

- Observing, Measuring, and Identifying Properties
- Seeking Evidence
- Recognizing Patterns and Cycles
- Extending the Senses
- Identifying Cause and Effect

WatermelonMagic.com



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Next Generation Science Standards

LIFE SCIENCES

- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-LS1-1)
- Use observations to describe patterns of what plants and animals (including humans) need to survive. (K-LS1-1)
- All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)
- All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)
- Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2)
- Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)
- Plan and conduct an investigation to determine if plants need sunlight and water to grow. (2-LS2-1)
- Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)
- Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)
- Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)
- The environment also affects the traits that an organism develops. (3-LS3-2)
- Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)

PHYSICAL SCIENCES

- The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)

EARTH AND SPACE SCIENCES

- Plants and animals can change their environment. (K-ESS2-2)
- Systems in the natural and designed world have parts that work together. (K-ESS2-2)
- Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1)
- Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)
- Things may change slowly or rapidly. (2-ESS1-1)

Common Core State Standards Connections

ELA/LITERACY

- W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-LS4-1)
- W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-LS4-1)
- RI.3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). (3-LS1-1)

MATHEMATICS

- MP.2 Reason abstractly and quantitatively. (K-ESS2-1)
- MP.4 Model with mathematics. (K-ESS2-1)
- K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)
- K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)