

Seed Saving

Grade K to 7
Science, Math, Art
1 hour and 30 min.



information
for the
teacher



Photo Credit: "Seed Saving" by Alex "Skud" Bayley via flickr, used under Creative Commons license 2.0 (CC-BY-2.0).

The practice of saving seeds is one of the oldest agricultural practices and has been in existence for the last 10,000 years. Seed plants make seeds to reproduce and grow into new plants. Seeds can be saved for future planting if they are collected and stored correctly. Farmers have passed seeds on through many generations and seed saving is a way to preserve biodiversity. There are seed banks worldwide, which collect and store thousands of plant species and varieties to ensure future planting success and to protect against natural disasters, if seed crops are lost.

vocab

SEEDS

Seed The small embryonic plant covered by a hard seed coat, dormant until conditions are met for germination

Seed Coat A hard covering which encloses a seed and protects it from damage, insects, fungi, fire, dessication, etc.

Germination The sprouting of a seed, when environmental factors are favourable

Delayed Germination When environmental factors are unfavourable for seed germination, seeds remain viable but will not sprout

PLANT GENETICS

Cultivar A plant (or group) which has been selected due to its desirable characteristics, usually a product of plant breeding. Most of our food crops are cultivars, selected for taste, resistance to disease, yield, etc. The word cultivar is a combination of cultivation and variety.

Heirloom Seed Variety An old seed cultivar that often has resistance to local pests, diseases and extremes of weather. They are often over 100 years old and are not commonly used in industrial agriculture.

Open Pollination Natural pollination, which may occur by wind, insects, and birds, in contrast to controlled pollination by humans.

Genetic Diversity Biodiversity based on the genetic characteristics of a species or group of species. By saving seeds from plants, one is preserving genetic diversity.

Part 1 Introduction to Seeds

Learn what individual seeds look like, where they are found on a plant., and when they are best collected.



NOTE: This lesson is best done in the **fall**. Please read through Part 2 before beginning the lesson to get an idea of the timeline and setting required for the activities.

MATERIALS

- Several sets of the picture cards included with this lesson (you'll be splitting the students into groups, and each group will need one set of cards). You'll need to photocopy and cut these cards prior to the lesson.

and / or

- Real seeds, vegetables/fruits, and flowers as listed on the pictures, or examples of seeds that you intend to harvest in Part 2 of this lesson

OBJECTIVES

- Learn why saving seeds is important
- Explore examples of different seeds
- Learn where seeds are found on a plant and when they are best collected

LESSON

Introductory Discussion

- » What is a seed? Why do plants produce seeds? (*To grow into new plants. Seeds are also a food source for animals and humans*)
- » Where can you find seeds? What part of the plant holds the seeds?
- » Why do we need to save seeds?

Matching Seeds with Vegetables, Fruit, and Flowers

1. Put the students in groups. Show the class 1 or 2 different kinds of common seeds (such as bean or sunflower) and ask the students to call out what kind of seed you're showing.
2. Hand each group a set picture cards (or real seeds and fruits, vegetables, and flowers, or a combination), and have groups match the seed to the fruit, vegetable, or flower that it produces. Go over the answers as a class (*see the seed pictures to the upper right of this page*).

Where Do Seeds Grow?

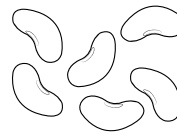
If your school has a garden, you could do this part outdoors. Elicit from students where the seeds grow on different plants. Start with the more obvious plants (like sunflowers or beans) and gradually move to the more difficult ones (like lettuce or radishes). Demonstrate to students how leafy plants go to seed by showing them examples outdoors or in photos, or by drawing pictures on the board. *See the guideline to the right for answers.*

When Is a Good Time to Harvest Seeds?

Draw a timeline on the board and label it with the words Spring, Summer, Fall, Winter. Elicit from students when we plant seeds (Spring), when the seed becomes a big plant (Summer), and when the plant starts to die (Fall). Ask students which season is the best for getting seeds from plants.

- » *Answer: Fall, because the plant is old and all of its energy is going into making seeds. It wants to make seeds before it dies so a new plant can grow next year.*

SEED MATCHING ANSWERS



beans



peas



pumpkin



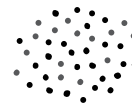
tomato



lettuce



radish



broccoli



sunflower

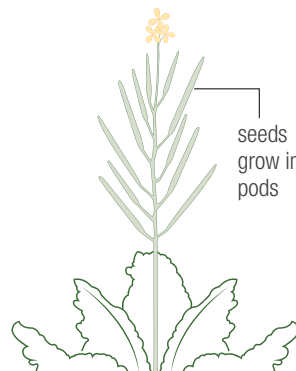


marigold

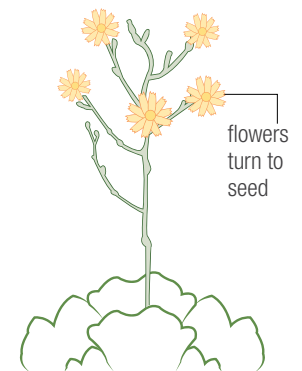
WHERE DO SEEDS GROW?

Seeds can grow...

- inside fruits and vegetables (eg. tomatoes, peppers, pumpkin, squash)
- inside flowers (eg. marigolds, sunflowers)
- inside pods (eg. peas, beans)
- at the top of a plant
 - » this is common with leafy vegetables (eg. lettuce, kale, cabbage, broccoli, chard, beets, and radishes)



Plants such as kale, cabbage, and broccoli grow seed pods on tall stalks. When these seed pods are brown and dry, the seeds inside are ready to be harvested.



Lettuce plants grow flowers on long stalks, and these flowers make seeds. When the flowers are brown and dry, the seeds become fluffy (like dandelions), the seeds are ready to be harvested.

Part 2 Saving Seeds

Learn how to save a variety of seeds and create hand-made seed packages.



MATERIALS

- Dried fruits and/or seeds from the vegetable garden, school yard, or home garden
- Seed packet template included with this lesson (or use old envelopes), one per student
- A few commercial seed packages so that students can see an example of relevant information and the design
- Magnifying glasses
- Seed catalogues with info on vegetable and fruit varieties

OBJECTIVES

- Learn how to save seeds and why it is important
- Explore seed diversity
- Design and create your own seed package

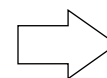
PREPARATION

Before the lesson, you will need to do one of the following:

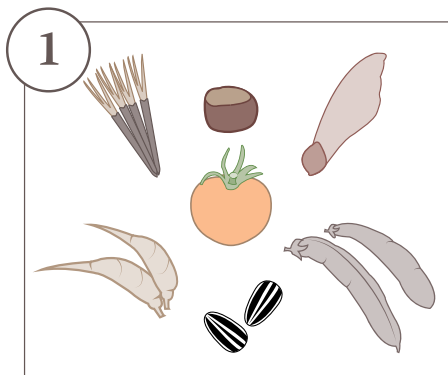
- Find a site (eg. a garden) with plants that have seeds ready to be harvested.
- If no such site is available, you could do the lesson with locally-grown squash, pumpkin, or tomatoes purchased at a farmer's market.
- Alternatively, you could find a site with maple or horse chestnut trees that have dropped some seeds to the ground.

NOTE

See next page for details on how to harvest and save specific seeds and what information to include on the seed package.



LESSON



1. Collect seeds. Go on a seed hunt to look for different seeds around your school garden, schoolyard, vacant lot, back lane or natural area (this is best done in the fall).

Seeds may be in fleshy fruits, such as a strawberry or raspberry or as hard dry nuts like acorns and chestnuts. Seeds may also be found in pods such as beans and peas. Younger students may like to collect maple

seeds and horse chestnut seeds, which are large and easy to collect. Students with gardens may wish to bring in seeds of their own.

IMPORTANT: All seeds should be fully ripe. This usually means that the plant looks “dead” or brown. Do not collect “green” or unripened seeds, as these may not be viable.

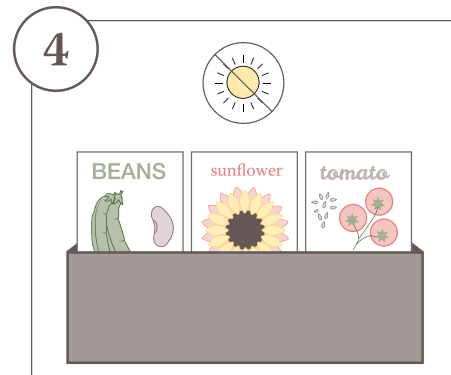


2. Sort seeds and dry them for a class seed collection. Allow at least a week for all seeds to dry before making seed packages and storing seeds. The larger the seeds, the longer it will take for them to dry.



3. Prepare seeds and packets. Give students seed pods, seed heads, or dried flower heads to clean and sort, extracting the seeds and leaving the chaff.

Hand out seed packet templates to each student. Get students to research and design their own seed packet based on the seeds that they have collected.



4. Store seed packages in the classroom in a cool, dark and dry place until spring. Get students to then plant their seeds in April or May.

IMPORTANT: Store seeds in paper bags or paper envelopes. Never store seeds in plastic bags as they can easily mold.

Closure Discussion

- » What advantages are there in collecting our own seeds?
- » How do you think our early ancestors collected and stored seeds?
- » Why were seeds used as currency in ancient civilizations?

SIX EASY PLANTS FOR SEED SAVING

BEANS AND PEAS: Collect pods when they are dry and brown. Do not pick green peas or beans as these seeds are unripe and will be unviable. Once pods are collected, thoroughly dry indoors for up to a week. Once dried get students to open the pods and collect the seeds.

SUNFLOWERS: Choose the biggest, best sunflower head for seed saving. This will ensure great flowers next year. Birds love sunflower seeds and will eat them, even if they are still unripe. To save seeds, cover the seed head in cheesecloth, old nylons or a similar mesh, while still on the plant. This will discourage the birds but allow seeds to develop and mature fully. Once the seeds are dropping out of the seed head into the mesh, cut off the dead flower head carefully. Dry the seed head hanging upside down, indoors for up to a week. Get students to remove all the seeds carefully and let seeds dry for another week. Then store seeds.

PUMPKIN or SQUASH: Get a local ripe pumpkin or squash from a garden or farmer's market or food store. Find out the variety if possible, when you purchase it. Cut it in half. Get students to scoop out all the seeds and remove all the pulp. Wash seeds using a sieve. Once seeds are thoroughly cleaned, dry them on paper towels or plate in a warm spot. Once thoroughly dried, store seeds.

CALENDULA or MARIGOLD: Seeds from these flowers are very easy to save. Let flower heads dry out and brown completely on the plant. Once they look dead, harvest the seed heads and dry indoors, upside down. Once dried, students can pull apart the seed heads to remove seeds.

TOMATO: Tomato seeds need to ferment before they are stored. To do this, collect your best looking very ripe tomatoes (local ripe tomatoes can also be purchased from a farmer's market or local grocery store, again try to find out the variety). Cut tomatoes horizontally and scoop out seeds. Put seeds into a glass jar and cover with up to 1 cup of water. Cover jar with cheesecloth or a J-cloth. Set aside for 2-3 days. Once a layer of mold forms and the tomato seeds start to smell fermented and sink to the bottom of the jar, remove mold. Pour seeds and remaining liquid through a sieve and wash thoroughly. Dry seeds on a paper plate or paper towel for up to a week, in a warm spot.

RADISH: Seeds from radishes are fun and easy to collect. Allow radish plants to flower and go to seed. Once the pods (which look like small pea pods) are fully ripe, dry and brown, harvest the pods. Check on them every day, as pods will open naturally and release their seeds and you may miss them! Allow them to dry indoors and then get students to open the pods to collect the seeds.

OTHER: Other easy seeds to save are sweet pepper, lettuce, fennel, kale, oriental greens such as mizuna, pac choi, and parsley.

INFO TO INCLUDE ON THE SEED PACKAGE

- Year and place of collection
- Plant name and variety if known, otherwise it could be labeled "mystery plant"
- Number of seeds (if too many to count, estimate)
- If able to research growing information, include this also.
 - » Eg. days to germinate, full sun or shade, needs trellising etc.This may be done using a seed catalogue.

references

BOOKS

- Aston, Dianna Hutts. 2007. *A Seed is Sleepy*. Chronicle Books, San Francisco.
- Cooney, Barbara. 1982. *Miss Rumphius*. Viking Press, New York.
- Pattou, Edith. 2001. *Mrs. Spitzer's Garden*. Harcourt, San Diego.
- Richards, Jean. 2002. *A Fruit is a Suitcase for Seeds*. Millbrook Press. Brookfield Conn.

ONLINE

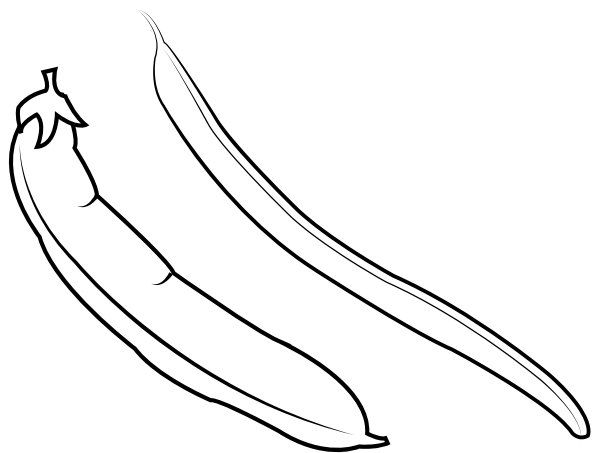
- **Seed and Plant Sanctuary for Canada:** a helpful website <http://www.seedsanctuary.com/articles/seedsaving.cfm>
- **Comox Valley Growers and Seedsavers**
Valuable information about seed saving for different vegetable crops: <http://cvgss.org/seed-saving-101/>

extensions

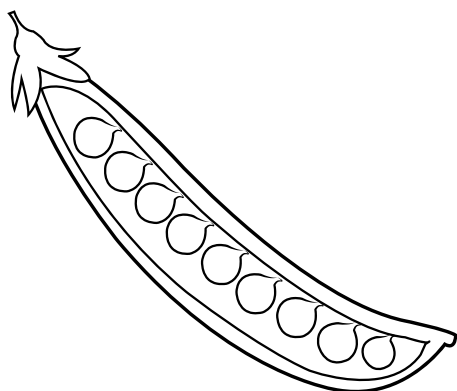
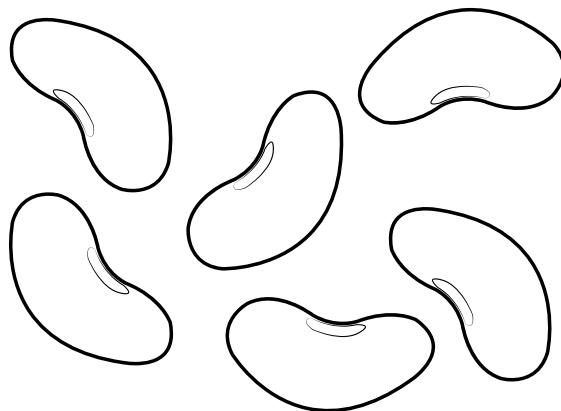
- In the spring, let students plant out their dried seeds and do a germination experiment. Plant 10 seeds and see how many seeds will actually germinate. Record data on a bar graph. Or grow seeds in different planting media (sand, topsoil, different soil types).
- Attend a seed exchange such as Seedy Saturday at **Van Dusen Botanical Gardens**, in Vancouver. <http://vandusengarden.org>
- Check this website for a seed exchange near you: **Seeds of Diversity** <http://www.seeds.ca/ev/events.php>
- Make a seed picture, with glue and a collection of seeds.
- Design a life cycle of your seed.

credits

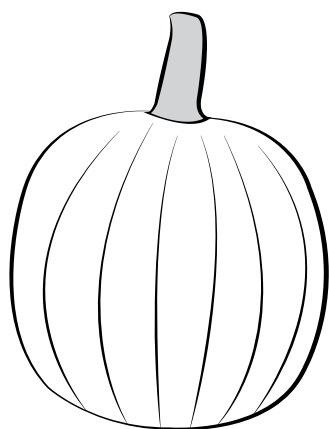
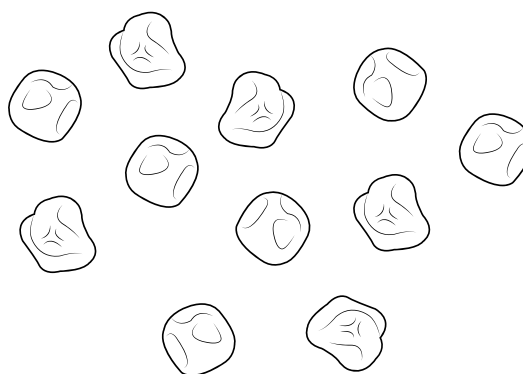
Lesson developed and written by Catriona Gordon.
Design by Lisa Rilko



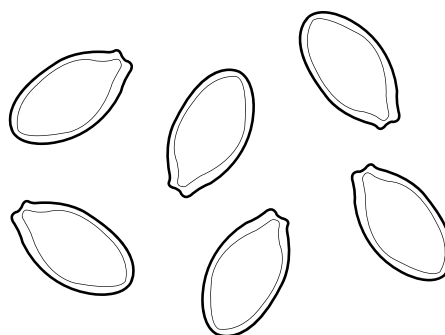
beans

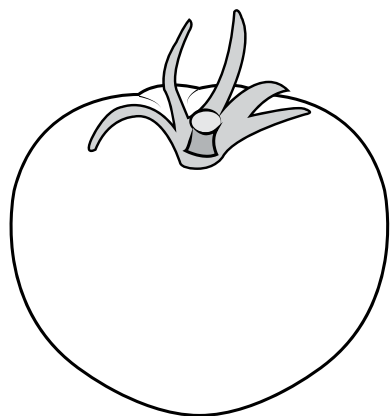


peas

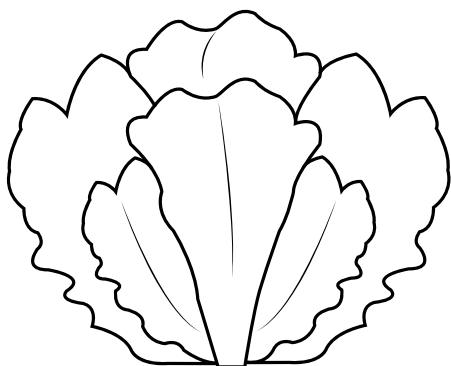
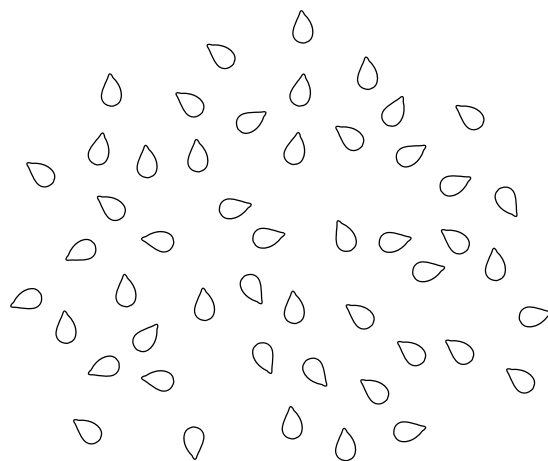


pumpkin

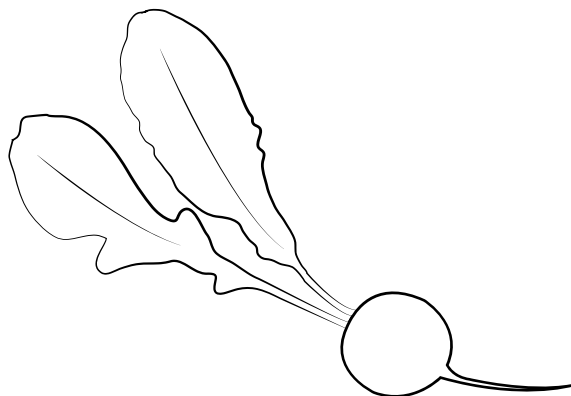




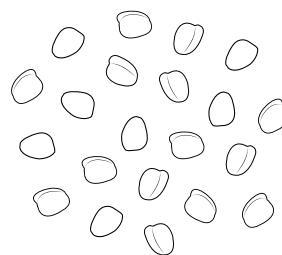
tomato

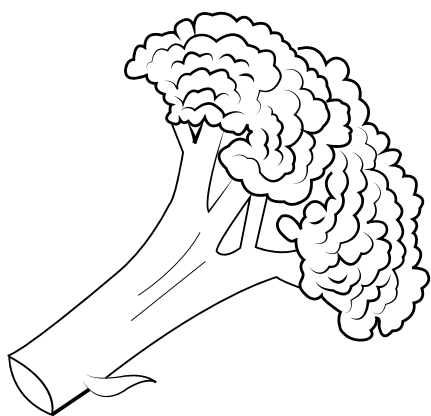


lettuce

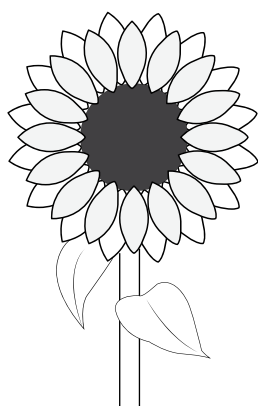
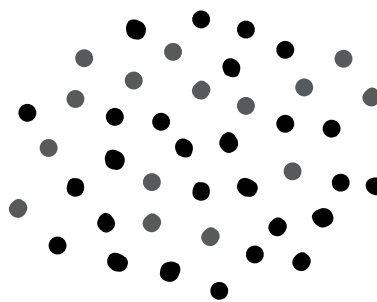


radish

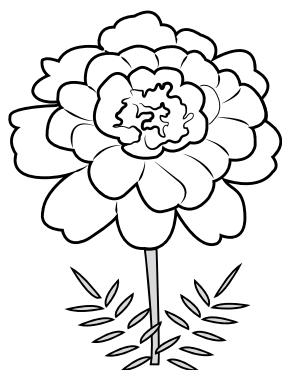
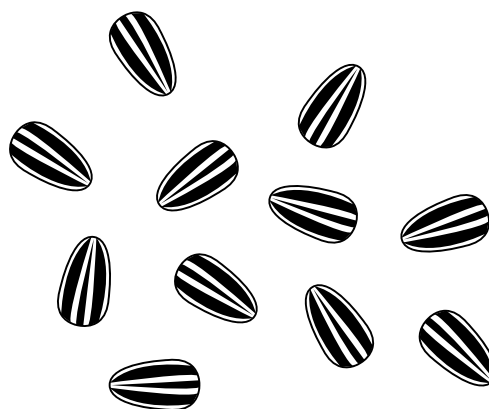




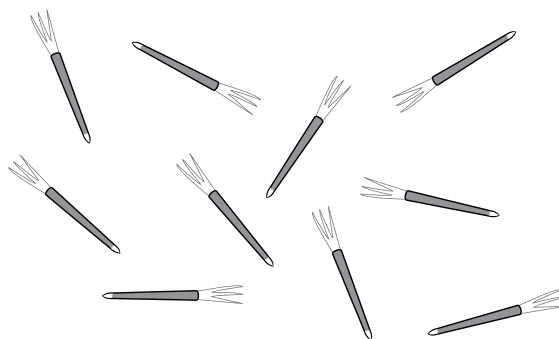
broccoli



sunflower



marigold



Seed Packet Template

» for use with the Seed Saving lesson

