



Growing Up Organic operates on traditional and unceded territory of the Algonquins: now known to many as Ottawa, and now home to many from across Turtle Island and beyond.

Grades 9-10

Seed Saving Workshop

Mindfulness minute: If it speaks to you, take two minutes with your students before this workshop to slow down and root down with this mindfulness minute.

LESSON FOCUS AND GOALS

This workshop allows students to explore the loss of biodiversity associated with industrial food production while creating an opportunity for them to participate in the age-old tradition of seed-saving, thereby contributing to preserving genetic diversity in the school garden. There are many opportunities to extend this lesson to connect to classroom lessons, for example, around classification and Linnaean Binomial system, as well as plant reproduction.

LEARNING OBJECTIVES

Grade 9

Biology: Sustainable Ecosystems

OVERALL EXPECTATIONS:

B1- Assess the impact of human activities on the sustainability of terrestrial and/or aquatic ecosystems, and evaluate the effectiveness of courses of action intended to remedy or mitigate negative impacts;

B2- Investigate factors related to human activity that affect terrestrial and aquatic ecosystems, and explain how they affect the sustainability of these ecosystems.

SPECIFIC EXPECTATIONS:

B2.1 - Use appropriate terminology related to sustainable ecosystems, including, but not limited to: bioaccumulation, biosphere, diversity, ecosystem, equilibrium, sustainability, sustainable use, protection, and watershed

Health and Physical Education: Healthy Living

SPECIFIC EXPECTATIONS:

C3.1 - Analyse the influence of social and environmental factors on food and beverage choices (e.g., financial status, culture, religion, media influence, peer influence, family food traditions, accessibility of different kinds of food, restaurant choices, proximity to where food was produced, environmental impact of food production methods)

Canadian and World Studies: Geography

SPECIFIC EXPECTATIONS:

B1.4 - Explain how human activities can alter physical processes and contribute to occurrences of natural events and phenomena (e.g., paving over land can alter drainage patterns and cause sinkholes; some agricultural practices can contribute to soil erosion; deforestation can make slopes vulnerable to landslides)

E1.1 - Analyse the effects of food production practices, distribution methods, and consumer choices on the sustainability of Canada's food system;



Grade 10 Biology

SPECIFIC EXPECTATIONS:

B1.2 - Analyze, on the basis of research, ethical issues related to a technological development in the field of systems biology (e.g., cloning, ..., transgenic transplants), and communicate their findings

Health and Physical Education: Healthy Living

SPECIFIC EXPECTATIONS:

C3.1 - Demonstrate an understanding of how they, as consumers, can have an impact on food and beverage choices at school and in the community (e.g., promoting availability of healthy choices in restaurant and cafeteria menus and in grocery stores, raising awareness of ethical and environmental considerations related to food choices)

MATERIALS NEEDED

Plants gone to seed in the garden (lettuce, beans, basil, pumpkin, tomatoes)

Various commercial seed packets

Envelopes

Biodiversity PowerPoint (available on the Growing Up

Organic website under GUO Workshops)

USC Video: "Banking Diversity"

<https://www.youtube.com/watch?v=dGG09BHIMV4>

National Geographic Chart "Our dwindling food variety" available at:

<https://www.nationalgeographic.org/media/infographic-design/>

STRUCTURE / ACTIVITY

Part 1: Why Save Seed

Before beginning, ask the students, in groups of five or six, to write down all the different varieties of given vegetables (tomatoes, squash, and lettuce work well here).

What do we mean when we say heirloom? Does anyone have heirlooms in their own family?

Like important family heirlooms, heirloom seed varieties are passed down from generation to generation, preserving biodiversity along the way. While we often rely on a few varieties of vegetable species, there exist thousands more. Unfortunately, we are losing this biodiversity at a rapid rate. Some efforts are taking place around the world to save heirloom varieties of vegetables – a process that we can participate in as well. If time allows, view the Banking Diversity (or Story of Food) video and follow with a discussion of the loss of biodiversity of edible plants.

How many varieties of various vegetables did you write down with your peers?

Display the National Geographic chart and compare these numbers.

Why do you think we have lost so many varieties?

The world depends on plant diversity for healthy food. A few generations ago, farmers and gardeners grew over 35,000 varieties of food plants in Canada. But then seeds became a mass-marketed product. People grew the same varieties everywhere and stopped saving community heritage varieties. Locally adapted varieties vanished: 3/4 of food biodiversity died out in the 20th century. Only 10% of the remaining varieties are sold by seed companies; the rest are in collections, not accessible by the average gardener.

View the "Biodiversity Slide Presentation" as a game, having students try to guess the various vegetables shown on the slides.

Seed Saving is an age-old tradition that works against the loss of biodiversity by preserving many of the varieties of fruit, vegetables and grains that would otherwise be lost. There are several reasons to conserve varieties.

Why do you think it is important to preserve these varieties?

Remember to include reasons of:

- Food security and disease resistance
- Consumer choice and the different priorities of large companies versus smaller growers/eaters
- Grower independence from companies controlling the food chain



Part 2: Seed Collecting

Discuss seed saving with students: its historical significance and present day value, as well as the difference between open-pollinated vs. hybrid seeds.

Show students how to choose plants from which to collect seeds, and how to collect the seeds (depending on the plant variety). Demonstrate how to extract the seeds. If the seed feels a little damp, leave them to dry on a plate before labelling and storing.

See resources on the Growing Up Organic Website for more information.

Extension

1. Have each student choose one type of fruit or vegetable and research its genetic history.

How many varieties existed at one point? How many exist today?

Do we know its wild ancestor?

What are three of the most interesting varieties still in existence? Find a seed producer for these varieties in North America.

2. Organize a "Seed Swap" with a neighbouring school or a seed sale.