# **About the Garden Lessons**

Over the course of the Garden Lessons, we will walk educators and young gardeners through the process of starting a garden from planning to harvest to putting the garden to bed for the winter. **Inside, you will find activity guides, curriculum connections, and tips and strategies for successful school gardening.** This hands-on series of Garden Lessons will support educators, youth leaders and students to start and tend to a garden project. These lessons were originally adapted from the Nova Scotia School Garden Resource Guide (2014).

This series is ideal for the integrated learning nature of Nova Scotia elementary curriculum; however, these activities can engage an all ages audience. Throughout the series that spans a full growing season, participants will keep a garden journal for planning, observation, and creative expression. Each student can have their own journal, or a group can keep one together.

Getting youth in the garden offers them opportunities to shape their food system, learn healthy food choices and connect with nature, all while building resiliency in a changing climate and having fun along the way.

## **Lesson Goals**

Grow Eat

Nourish Nova Scotia

- Engage in hands-on learning
- Gain food literacy skills
- Learn climate action connections
- Support emotional wellbeing and connection to the non-human world

# **Gardening and Climate Action**

Look for these climate action icons in Grow Eat Learn resources to make connections between gardening and the climate!



Habitat Creation & Biodiversity



Soil Stewardship



Waste Reduction & Circular Systems



Water Stewardship

Adapting to climate change is critical for our food system. By engaging in the garden, students can learn about food production and its interdependence with plants, animals and weather.



Food Security & Sovereignty

# Garden Lesson 2 Starting Seeds Indoors

# Introduction

Complete this activity between March and May.

Gardens provide a diverse, hands-on teaching environment. One of the benefits of gardening, whether at home or in a school setting, is the opportunity to foster a child's connection with their natural environment. Gardens also provide an engaging place to teach and practice healthy food choices.

Lesson 2 will guide youth to create an indoor nursery to start and care for seedlings. Ahead of planting the seeds, create an indoor sun map to help you choose where to place your seeds once they sprout and whether or not a grow light would be helpful. In this lesson, we also explore the nature of seeds and how to plant and care for them.

# 2.1 Create an indoor sun map

**1.** In the garden journal, write "Garden Sun Map" at the top of the next blank page. The following activity will be completed on this page.

2. For now, these plants are too small and delicate to go outside. We will start by choosing an indoor space for the seedlings to grow. Plants need a lot of sun, so in order to pick a good spot for them to live indoors, we will create a Sun Map.

3. Observe this space for an entire day. Make note of:

- a. Which spots are sunny in the morning? Afternoon?
- b. Which spots feel warm?
- **c.** Which spots have good air flow from a nearby window or door?

**4**. Draw a map of this space, including any relevant details (like furniture and windows). Using a ruler can make it easier to keep your map looking neat and tidy.

**5**. Based on the observations from Step 3, fill in the sunny and shady spots on the map with colours, pictures or shading. Add as many details as would be helpful.

# Learning Connections

#### Science

Question, Observe, Record, Identify, Monitor

### **Mathematics**

Measure, Model, Compare, Calculate

#### Language Arts

Comprehend, Read, Write, Describe

### **Visual Arts**

Design, Create, Draw

### Climate



Water Stewardship



Food Security & Sovereignty

Soil Stev

Soil Stewardship



6. Using this Sun Map, decide where the seedlings will grow. Most plants need at least six hours of direct sunlight, so consider that as well when choosing the perfect spot. In the example below, the counter-top in front of "Window 2" appears to be the best spot. This spot is sunny all day and the window can be opened to allow air to flow through.

#### 2.1 Example



# 2.2 Garden journal seed exploration

**1.** Write the word "Seeds" at the top of the next blank page in your garden journal. The following activities will be completed on this page.

- 2. Open a seed package and look at the seeds.
  - **a.** What do the seeds look like? Think about the colour, shape and size.
  - b. What do the seeds feel like? Think about the texture.
  - **c.** If using multiple seed varieties, do the different types of seeds share any characteristics with each other or are they very different?
- 3. For each type of seed:
  - **a.** Draw a picture of the seed and a picture of what the seed will grow into.
  - **b.** Write a list of 3-4 characteristics of each seed, including any listed above (colour, shape, size, texture) or any others you can think of.

4. Read the back of each seed package. For each type of seed, also write down:

- **a.** How many days until a sprout should appear ("days to sprout")?
- **b.** How many days until the vegetables can be harvested ("days until first harvest")?

### **Tips and Tools**

#### 2.1 Materials:

- Garden journal
- Pencil or pen

### **Optional:**

- Coloured pencils or markers
- Ruler

Plants need sunlight, water, nutrients, room to grow, and air. They need to breathe for the same reasons we do. Wherever the seedlings are grown, they should ideally get a little bit of airflow from an open door or window.

### 2.2 Materials:

- Seed package(s)

   Beans, peppers, tomatoes and zucchini are good for beginners. For variety, choose two
- or three vegetables.
- Garden Journal
- Pencil or pen



**5**. Using a calendar to count the days, determine the date you can harvest your vegetables by adding the number of "days until first harvest" to your planting date (today).

#### 2.2 Example



## 2.3 Plant seeds

**1.** Add soil to a container big enough to add and mix in water. Moderately water the soil, mixing it in as you go until the soil is moist to the touch.

Optional: Mix some coffee grounds or compost with the soil. This will provide nutrients that will help the seeds grow.

2. Fill the seed trays with moist soil and bury multiple seeds per plug. Try to have at least 2-4 plugs for each type of seed. Check the back of each seed package to find out how deep to bury the seeds.

**3**. On the "Seeds" page of the garden journal, draw a diagram of the seed tray and label where each seed is growing using words, numbers or drawings.

#### 2.3 Example



4. Check moisture daily by gently touching the soil and observing the seedlings. Water if it looks and feels dry times per day until the soil is moist but not soaked.

Optional: Use a spray bottle to water seeds evenly and prevent over-watering or see activity 2.5 to create a self-watering tray.

### **Tips and Tools**

For most annual flowers and vegetables, plant seeds at a depth of about 1/4 to 1/2 inch below the soil surface. Larger seeds should be planted at a depth of **2 times** their diameter. Smaller seeds should be planted closer to the surface.

Some seeds never sprout, and that's okay! There are many reasons why this can happen, so don't be discouraged if there are fewer successful sprouts than expected.

Most seeds need darkness to sprout. To save space before they sprout, you can stack the plug sets. When you water, it trickles down to the bottom. Take a peek daily. Once you see the beginning of a sprout, remove it from the stack.

### 2.3 Materials:

- Seed starting plugs and waterproof tray
- Seed package(s)
- Potting soil
- Garden journal
- Clear plastic covering

   ex. Cling wrap,
   clear plastic bag or
   a plastic seed tray
   dome.



**5**. Cover the seed tray loosely with a clear plastic covering to act as a mini-greenhouse. Remove the cover for an hour per day to allow air circulation and prevent mold growth. A plastic seed tray dome is optimal and can deter rodents.

6. Once sprouted, keep the seed tray on a sunny windowsill. Try to find a window where the seeds will enjoy 6-8 hours of direct sunlight. Activity 2.1 will help determine if the window is sunny enough or if a grow light may be necessary.

## 2.4 Track sprout growth

1. Write the word "Sprouts" at the top of the next blank page in the garden journal. The following activities will be completed on this page.

2. For each plant, record the day that it sprouts (when the plant emerges from the soil). Dispose of the plastic covering once the first sprout appears to allow room to grow.

**3**. Measure sprouts with a ruler or measuring tape twice per week, about every 3-4 days, and record the height of the plants as they grow.

**4**. When the seedlings are 2-3 weeks old, they can be ready to transplant into larger individual pots. Refer to Garden Lesson 3 for full instructions and activities. If planning to pot up seedlings, consider using recycled containers instead of plant pots (such as ice cream tubs, pop bottles or old toys), be sure to save them in advance.

#### 2.4 Example

	Zucchini I		Pepper 1		Pepper 2	
Sprout Date	April 23					
	Height	Date	Height	Date	Height	Date
	3 mm	April 27				
	7 mm	April 30				

#### **Optional:**

- Try using recycled containers, such as takeout containers, in place of a store-bought tray.
- Coffee grounds or compost
- Spray bottle for watering

#### 2.4 Materials:

- Garden journal
- Pencil or pen
- Ruler or measuring tape



# 2.5 Create self-watering seed tray (optional)

**1.** To create a self-watering (wicking) tray for seedlings, you will need to source a rigid material you can cut to create an insert that will fit inside your bottom tray. If using a standard seed tray, you can just use a modified second tray as the insert.

2. If using a second seed tray, cut a slit (approximately 2-4 mm wide) for the towel to slip down through along the short sides (both ends) of the tray. If using a rigid plastic (like a corrugated plastic sheet), cut it to fit inside your bottom tray with room for the fabric to hang over at each short side.

**3**. Measure the height of the mason jar rings (or alternative water proof riser). Cut the towel or fabric the width of the seed tray and cut the length of the seed tray plus the height of the risers (mason jar rings or other material).

**4**. Fill the bottom tray (now the water reservoir) with water up to the top of the risers.

5. Lay the towel in the tray with the cut ends or over top of the rigid plastic material. Make sure the excess ends of fabric are pushed through the slit or over the edge of the rigid plastic material so that they hang straight down into the water reservoir.

6. Place the smaller seed plug inserts (where your seeds are planted) directly on top of the soaked fabric ensuring that the holes in the bottom of the seed plugs are making contact with the wet fabric.

7. You can use this self-watering tray all the time or just on weekends or periods when seedlings cannot be tended to daily. Check water reservoir daily to ensure it isn't dry.

### **Tips and Tools**

Place soaked seeds in a small ziplock bag and watch them sprout as a parallel experiment to seeding in soil.

#### 2.5 Materials:

- An extra seed tray or a rigid, waterproof material cut to fit inside the seed tray
- Towel or cotton fabric, slightly larger than the seed tray (used is great)
- 5 mason jar rings or 5 waterproof risers at least 1.5 cm and up to 4 cm tall

#### Click for next lesson:

Garden Lesson 3: Planting a Garden

