ONTARIO COUNCIL FOR TECHNOLOGY EDUCATION

Green Industries
Growing Conditions
Grade 9 / TAS1O / THJ1O
2024

By the end of this project, the student will identify and explain the biotic and abiotic factors that will impact the growth of a variety of different plants. Students will demonstrate an ability to research and investigate different factors that impact the growth of plants before making an informed decision on which plants they will grow in their selected region. Students will demonstrate an understanding of soil basics, plant nutrition, seed germination and plant care. Students will demonstrate learning skills that include responsibility, organization, independent work, initiative and self-regulation.

takeTECH

Table of Contents

Introduction 2
BBT Covered in the Activity 2
Project Outline 2
Student Activities 2
Planning Notes 3
Overall Expectation 3
Skilled Trades and Apprenticeship Opportunities 5
Engineering design process 5
Fundamental technological concepts 5
Universal Design for Learning 5
Indigenous ways of knowing, doing and learning 5
Potential for Community Partnership 6
Innovations and Emerging Technologies 6
Career Opportunities 7
Assessment and Evaluation 7
Experiential Learning 7
Reflection of Learning 8
Health and Safety Considerations 9
AT ALL TIMES – IF IN DOUBT, SEE YOUR INSTRUCTOR 9
Activity #1 - Soil Testing 10
Activity #2 - Growing Climate 10
Activity #3 - Seed Selection & Purchasing 11
Activity #4 - Seed Germination & Care 12
Activity #5 - Companion Planting & Design 13
Activity #6 - Ongoing Care with Journal 14
Appendix 1 15
Appendix 2 16
Appendix 3 18
Soils Textures Using the Ribboning Technique 19
Appendix 4 20
Appendix 5 22
Appendix 6 23
References 24

Introduction

Course Code: TAS1O / THG1O
Destination: Open
Grade Level: 9
Online Project Name: Selecting Appropriate Plants for Specific Region

This project can be utilized in a siloed rotation process or a themed course in the focus area.

BBT Covered in the Activity

This activity will primarily cover Green Industries topics. The project can be modified by the teacher to include other components from other broad based technological areas that are connected to the teacher's long term plan. One example would be to include components from Hospitality & Tourism by focusing on edible flowers that can be used for decoration or salads or herbs that are commonly used in the kitchen.

Project Outline

By the end of this project, the students will be able to identify plant species and their proper growing conditions for various regions. Students will demonstrate an understanding of the abiotic and biotic factors that impact the growth of plants. Students will demonstrate an understanding of the different tests and data that needs to be collected to ensure successful growth of plants. Students will work on both numeracy, literacy skills, and a collection of the Fundamental Technological Concepts including; aesthetics, Environmental Sustainability, Creaton, Material and Systems throughout the project. Students will demonstrate learning skills that include responsibility, organization, independent work, initiative and self-regulation. Activity numbers one to three will take a single class period (60 mins) to complete. Activity number 4 and 5 are ongoing and could take multiple weeks or months to complete. You have the ability to select which portions of the complete activity you wish to complete based on your resources available and time.

Student Activities

Activity #1: Soil Testing

Activity #2: Growing Climate

Activity #3: Seed Selection & Purchasing

Activity #4: Seed Germination & Plant Care

Activity #5: Ongoing Care with Journal

Planning Notes

In a BBT specific course this activity should occur at the beginning of the course to allow the students to grow their plants over the course of the semester.

This collection of activities is designed as a complete set.You have the ability to run each one individually as stand alone lessons or a combination of any of the above. Below is a list of materials that will be required for each activity to help guide the facilitation of the activities.

Activity #1: Soil Testing

- 3 Different Soil Samples
- pH test strips
- Distilled Water
- Tap Water
- Activity Sheets (Link to Testing PH of Soil & Link to Testing Soil Texture)

Activity #2: Climate

- Access to computers with Internet
- Climate Activity Sheet (Link to Climate Profile Worksheet)

Activity #3: Seed Selection & Purchasing

- Access to computers with Internet
- Ordering form (Link to Ordering Form)

Activity #4: Seed Germination & Plant Care

- Access to the internet

Activity #5: Companion Planting

Activity #6: Garden Design

Activity #7: Ongoing Care with Journal

Plant Care Journal (Link to Plant Journal)

Overall Expectation

These overall expectations listed here assumes you are completing all five activities in this package. If you only do some of the activities, understand that you will not meet all the expectations listed.

A1: Initiating and Planning: demonstrate an understanding of fundamental technological concepts and related skills by initiating and planning projects.

A2: Designing and Performing: develop projects that involve creating products and/or services, using a variety of resources and techniques, and record and development of their projects

A3: Analyzing and Refining: evaluate and refine processes, products and/or services

A4: Follow Health and Safety Practices: apply an understanding of health and safety practices and procedures when using materials, tools and equipment.

B1: Fundamentals of Technological Development: demonstrate an understanding of how various needs and underlying social, economic and environmental factors drive the evolution of technology.

B2: Impacts of Technology: analyze impacts of various technologies on individuals, society, the economy, and the environment

B3: Careers and Pathways in Technology and the Skilled Trades: explore and describe career in technological fields and the skilled trades, and pathways for entering them

Skilled Trades and Apprenticeship Opportunities

Apprenticeship and Skilled trades information was collected through skilledtradesontario.ca please ensure to check the website to ensure you are accessing the most recent updated information. For additional skilled trade, apprenticeship, and career opportunity resources visit the Ontario Council for Technology Education website or contact your schools guidance department.

Trade Name	Trade Code	Classification	Exam	Red Seal	Trade Details
Horticultural Technician	441C	Non-Compulsory	YES	YES	Horticultural Technician Link
Agricultural - Fruit Grower	640F	Non-Compulsory	NO		Agricultural Fruit Grower Link

Engineering design process

The engineering design process will allow students to demonstrate their learning through a design process connected to the broad based technology classes.

This engineering design process has been modified from the Ministry of Educations model and as part of the expectations this step-by-step guide was developed to help the educator meet those expectations This engineering design process is to use as the basis of the activity below.

Students will go through the process of Initiating and Planning, Designing and Performing, and Analysing and Refining a project based on a real world problem.

Any engineering design process can be used. Connect with your board to implement the engineering design process that is currently being used in your district.

Fundamental technological concepts

The fundamental technological concepts covered in this project include exploring environmentally sustainability, creative, structure, safety, material, innovation & function.

Link to the Fundamental technological concepts from the Ministry of Educatation

Universal Design for Learning

Through this activity there are opportunities for student influence to reflect the student's heritage and culture. Students are encouraged to reflect on their own influences in their personal lives. Students are encouraged to engage with the lesson through doing as many components as possible. At the conclusion of these lessons the goal is that students will become more aware of the plants that grow in their regions and how to strategically select plants to grow from the place they call home or the location of a client in a different region.

Indigenous ways of knowing, doing and learning

This document was written with resources from the place this was written and as educators we need to consider the resources and traditions of the place the teachings are taking place. Please use these resources in this section as a guide. Please reach out to your schools liaison or representation of the Indigenous teachings for your region.

The author has suggested an activity that honours the place from where it was written.

Please consult your school boards First Nation, Metis and Inuit curriculum and / or cultural support team to inform content or activities relevant to communities in your area

Link to the Four Sacred Medicines and the Link to the Ojibwe Medicines

Potential for Community Partnership

Community is greater than the classrooms we are a part of. Consider reaching out to community and school board partners to support in the learning process and extend the learning beyond what is covered in these activities.

- Indigenous Elders
- Indigenous Educators
- Nursery Workers
- Garden Centres
- Seniors Groups

Innovations and Emerging Technologies

There are a variety of different technologies that are becoming more and more popular within the green industries field of study. Some of the innovations and technologies that are related to this collection of activities include:

- Precision Agriculture
    - Sensors: Soil moisture sensors, temperature sensors and other IoT devices help farmers and home growers monitor and manage their crops more efficiently by providing real-time data.
    - Drones: Used for aerial surveying, mapping and monitoring crop health, detecting pests and applying treatments.
- Vertical Farming
    - Hydroponics: Growing plants without soil by using nutrient solution in water.
    - LED Lighting: Energy-efficient lights that provide optimal wavelengths for photosynthesis, used primarily in indoor and vertical farms.

- Biotechnology
    - Genetic Engineering: Developing seeds/crops that are more resistant to pests, diseases and environmental conditions.
- Smart Greenhouses
    - Climate Control Systems: Automated systems that regulate temperature, humidity, and CO2 levels to optimize plant growth
    - Remote Monitoring: Allows farmers/home growers to control and monitor greenhouse conditions from anywhere using smartphones or computers.
- Data Analytics and Artificial Intelligence:
    - Predictive Analytics: Using data to predict crop yields, disease outbreaks, and optimal planting times.
- Sustainable Practices:
    - Composting Innovations: Advanced composting techniques that enhance soil health and reduce waste.

○

Career Opportunities

This list of potential career opportunities is not a complete list but a list of a variety of different career opportunities with a variety of different educational pathways required to be successful within the realm of the activities. For additional skilled trade, apprenticeship, and career opportunity resources visit the Ontario Council for Technology Education website or contact your schools guidance department.

- Botanist
- Farmer
- Agricultural Worker
- Forest and Conservation Worker
- Landscaper
- Gardener
- Grounds Worker
- Horticultural Technician
- Nursery Worker
- Greenhouse Worker
- Grower
- Plant Production Worker

Other useful websites could include:

- Website for Apprentice search
- Website for Ontario colleges
- Website for my blueprint
- Website for skilled trades Ontario

Assessment and Evaluation

Evidence of student achievement for evaluation is collected through this project from different sources using multiple sources to evaluate student learning. Student products will be in the form of completed activities that can be used for evaluation. Assignments for evaluation include rich performance tasks, demonstration, research, project based on real world setting. Assessment will include the categories of knowledge/understanding, thinking, communication and application.
Link to the Ministry of Edcation Achievement Chart

Experiential Learning

This activity has the ability to lead to an experiential learning opportunity through raising plants with different biotic and abiotic factors that will need to be considered. The students should be guided through this lesson with opportunities of reflection and the opportunity to become engaged in the activities through a hands-on approach.

Reflection of Learning

Teachers will ask the students to answer the following questions before, during and after the completion of all activities that conclude the student's presentation:

- What do you already know about factors that affect plant growth? What would you like to know? What questions do you have now? Explain what you liked and disliked about this project. Why?
- What do you hope to learn? What do you need to know now that you have started? Did you learn something new? What stands out?
- Where do you think your food that you eat comes from? What impact does this have on your life? Has the factors the growing conditions of plants had an impact on your diet?
- Please provide any feedback you may have for improving this lesson.

Health and Safety Considerations

There are minimal concerns with safety in this project. Using a knife may be required when poking holes into containers and should be addressed. Reviewing the following documents would be beneficial and help address any concerns applicable to safety

Link to Review of "Knife Handling" ToolSAFE Video
Link to Green Industries SAFEDocs (particularly page 31)

Green Industries workers handle knives frequently to cut plant material and flowers. Workers should know how to use them correctly in order to avoid cuts. Cuts often result from the improper use of knives. A sharp knife is safer than a dull one because it will cut materials more easily and with less pressure.

1. Always use the correct knife.
2. Always use a sharp knife. You are more likely to cut yourself with a dull knife because you will need to use more force.
3. Always cut with the blade facing away from your body.
4. Never let the knife's blade or handle hang over the edge of a table.
5. When carrying a knife, hold it by the handle with the point of the blade facing down at your side. Make sure that the sharp edge is facing behind you.
6. Do not try to catch a falling knife. Step away and let it fall.
7. When you are passing a knife to someone, lay the knife down on the work surface or pass it by carefully holding the dull side of the blade with the handle facing toward the other person.

Never use a knife to perform inappropriate tasks, such as opening soil bags or prying something apart. These tasks could damage or even break the blade

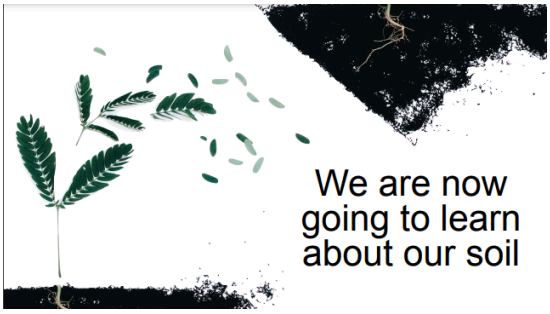
8. Carefully wipe the blade from its dull side.
9. Always wash, sanitize, and wipe knives before putting them away.
10. AT ALL TIMES - IF IN DOUBT SEE YOUR INSTRUCTOR

Activity #1 - Soil Testing

In this activity students will explore the characteristics of soil through 2 different activities. One of the activities will involve testing the texture and makeup of the soil and the other will be testing the pH of the soil to determine the appropriate plants that are able to grow in the soil type.

Students will then reference this link to the pH preference list (Planet Natural, n.d.) and eliminate any plants that will not thrive in their soil type.

Soil Presentation (can be found at this link for Appendix 1) or click this link for the Soil Presentation



Soil Activity (can be found at this link in Appendix 2) - Click this link to the testing PH of soil activity #1

Soil Activity (can be found at this link in Appendix 3) - Testing Click this link for Soil Texture - Activity #2

Activity #2 - Growing Climate

Looking at your local region you will have to see what kind of perennial plants will survive in the space and which ones will not. Some things to consider are Hours of sun, Average temperature and average rainfall.

After investigating the climate of your selected region complete the activity sheet (click this link in Appendix 4 for the climate profile worksheet) before selecting appropriate plants to start germinating before planting.

Click this link for the Historical Data

Click this link for the Canadian Climate Normals

Click this link for Plant Hardiness Zones

Activity #3 - Seed Selection & Purchasing

In this activity students will use the information that they have collected to make educated choices on which seeds they will be selecting to grow in the selected location. Students will need to consider the climate of the region, soil, water availability, sunlight conditions, and the plant hardiness zone.

At this stage you can invite an elder from your local area to talk about the medicinal plants and the different uses of native plants in your region to help guide the students in selecting native species and plants that serve a purpose culturally.

Once students have selected the variety of seeds they would like to see in their garden and create a purchasing list considering financial limitations set out by the instructor. Use the provided order sheet template (Appendix 5) or create your own.

Note: In my class I set out a financial budget for the entire class and have them work collaboratively as a group. The seeds contained in one package are more than enough for multiple students. So once they have selected a short list of seeds we come together and see who has what and make a final order.

Activity #4 - Seed Germination & Care

Students will use the resources provided to research information on seed germination and plant care

Resources:

- Gardening Know How article on caring for seedlings after germination
- The Spruce article on when should I feed plant seedlings
- Gardeners article on how to start seeds
- Gardeners article on Growing Tomatoes from Seed to Harvest

Students will then be required to answer the following questions before they are able to plant their own seeds successfully:

- What is a viable seed?
- What is required to encourage seed germination? (requirements/conditions)
- Explain the difference between a cotyledon and true leaves?
- What does damping off mean and what causes it to occur?
- What does it mean to transplant your seedlings?
- What does hardening off mean?
- Describe the steps involved in starting and caring for a tomato from seed to fruit.

After completing the above research and answering the questions posed above students will then be required to create a germination plan before they plant their seeds. Once the plan is completed the students should follow their plan.

Activity #5 - Companion Planting & Design

Plants can support or harm neighbouring plants in the same garden space. It is important to understand which plants are good neighbours and which ones are not. Begin the lesson with a brief discussion around the concept of companion planting and its benefits (e.g., pest control, improving growth and soil health) and show some examples of successful companion planting pairs (e.g., tomatoes and basil, beans and corn).

Divide students into small groups and provide each with a companion planting guide chart. Allow groups to access a computer if available to find additional information and expand their understanding of companion planting principles.

Provide each group with a garden plot/raised bed template (Use a design of a space at your school or an example of a raised garden box) and drawing materials. Students are to use their selected seeds from above and their research in companion planting to do the following:

- Select a variety of plants that work well together. Start with the ones that you have previously identified in the activities prior.
- Arrange the plants in the garden plot/raised bed, considering factors like plant height, sunlight, and spacing.
- Use different colours to represent different plants on their templates.
- Label each plant and include a legend

Once the activity is completed, have the students walk around and see some of the other designs that the students have come up with and the companions that they found work with their selected plants.

Facilitate a class discussion, asking questions like:

- Why did you choose these particular plant pairs?
- How do you expect these plants to benefit each other?
- What challenges might you face in maintaining this garden?

A possible extension to this activity would be to vote on one of the designs and create the garden space on the school property. Another extension could be to create a guide or brochure on companion planting with the plants that were researched in the prior activities to educate others in the area.

Using the Engineering Design Process students can design a garden space that meets one of the challenges:

1. A water wise garden that needs minimal water care
2. A garden that is accessible to the local retirement home

Activity #6 - Ongoing Care with Journal

In this activity students will record the abiotic and biotic influences on their plant growth through recording the care that students are taking to ensure their plants are healthy and thriving. This worksheet should be introduced after the seeds are planted before they germinate. This will allow the students to reflect on the care that they gave their plants and how it has positively or negatively impacted the growth of their plants.

Students should record when they watered, what type of water they used, how many hours of light the plants are getting, height of plants, the moisture content, etc. Make this include as much or little details as you want to include.

A sample document can be found at [this link at Appendix Six]

Appendix 1

(Link to the PowerPoint to learn about our soil

Appendix 2

Testing pH of Soil – Activity #1

Description

In this activity we are going to test three (3) soil samples. Through this activity we will follow written instructions, perform scientific tests, and create a report on the three (3) soils that we tested and their ability to grow healthy plants.

Materials Required

- 3 Soil Samples
- Access to Water
- 10 pH test strips
- Distilled water
- Tap water

Activity Direction

1. In front of you, you should have all the required materials to perform the activity. If you are missing something notify your teacher or collect your items that are missing.
2. Follow along with the teacher to test the first soil sample for pH and other factors.
3. How to test for pH?
4. Collect a representative soil sample: Collect a small sample of soil from the soil.
5. Prepare soil-water solution: Place your sample of soil into the centrifuge tube, to fill half of your container. Add distilled water until the liquid level is double the original level. Close the lid of the centrifuge tube, then shake for 30 seconds, make the soil sample & distilled water mixing well. Set aside and let them sit for 15 – 30 minutes.
6. Lay 1-2 piece(s) of pH test strips flat, suck a small amount of soil-water solution with a dropper, and squeeze 1 drop on each colour pad of pH test strip. Wait about 4 minutes, let the pH test strip react with soil-water solution completely.
7. Match colour pads to colour chart: depending on the soil pH, one or two colour pads will change colour. Matching the resulting colour(s) with the colour chart that accompanied the pH test strips to determine your soil pH value.

Water Statistics

What is the pH of the Distilled water?

What is the pH of the tap water?

Soil #1 Statistics

Where is the soil from: _____

When was the soil collected:_____

What is the pH of the soil: _____

What vegetables can be planted in this pH level (List 4)

1.
2.
3.
4.

Soil #2 Statistics

Where is the soil from: _____

When was the soil collected:_____

What is the pH of the soil: _____

What vegetables can be planted in this pH level (List 4)

1.
2.
3.
4.

Soil #3 Statistics

Where is the soil from: _____

When was the soil collected:_____

What is the pH of the soil: _____

What vegetables can be planted in this pH level (List 4)

1.
2.
3.
4.

Appendix 3

Testing Soil Texture - Activity #2

Texture Testing Method

1. Take a sample of the soil and remove the >2 mm particles (Gravel, debris, etc.) by sieving or by hand. Gravel is removed from the soil prior to texturing because it does not contribute to chemical and some physical properties of soils. The sample should be sufficient to fit comfortably into the palm of your hand.

2. Moisten the soil with little water and knead into a bolus.

3. Continue to work the bolus, adding more soil and water if necessary, until the soil no longer sticks to your fingers and there is no apparent change in plasticity (usually 1-2 minutes). If the bolus is worked for a long time it may dry but it can be rewet (the moisture of the sample will influence the length of the ribbon formed).

4. Using a clean, moistened hand, place the bolus between your thumb and forefinger and slide your thumb across the soil (shearing) to extrude a ribbon. Try to make a thin continuous ribbon about 2 mm thick and 1 cm wide.

5. Measure and record the length produced using a ruler.

6. **Soils with high clay content are further categorized by moulding the bolus into rods. If the rods fracture the soil is assigned a texture grade lighter than a medium clay. A breakdown of field texturing categories is given in table 1.

This method has been adapted from the [this link New South Wales Government.]

Table 1: Soils Textures Using the Ribboning Technique
Sand Coherence nil to very slight cannot be moulded; single grains adhere to fingers; nil to slight turbidity when puddled.
Loamy Sand Will form a ribbon to 5 mm. Slight coherence; definite turbidity when puddled in palm of hand
Clayey Sand Will form a ribbon 5 to 15 mm. Slight coherence, sticky when wet, many sand grains stick to fingers, discolours fingers with clay stain.
Sandy Loam Will form a ribbon of 15 to 20 mm. Bolus just coherent and very sandy to touch; sand grains visible
Light Sandy Clay Loam Will form a ribbon of 20 to 25 mm. Bolus moderately coherent but sandy to touch; sand grains easily visible
Loam Will form a ribbon of about 25 mm. Bolus coherent and spongy; smooth feel and no obvious sandiness; may be somewhat greasy, as organic matter is usually present.
Sandy Clay Loam Will form a ribbon 25 to 40 mm. Bolus strongly coherent sandy to touch; sand grains visible.
Clay Loam Will form a ribbon 40 to 50 mm. Bolus strongly coherent and plastic; smooth to manipulate
Sandy Clay and Light Clay Will form a ribbon 50 to 75 mm. Plastic bolus, slight resistance to shearing, sandy clay – can see, feel and hear sand grains. Light clay – smooth to touch
Light Medium Clay Will form a ribbon 75 to 85 mm. Plastic bolus smooth to touch; moderate resistance to shearing between thumb and forefinger.
Medium Clay Will form a ribbon 85 to 100 mm. Smooth plastic bolus: handles like plasticine and can be moulded into rods, moderate resistance to ribboning.
Heavy Clay Will easily form a ribbon over 100 mm. Smooth plastic bolus; handles like stiff plasticine; can be moulded into rods without fracture; has firm resistance to ribboning shear.
Each soil texture is classified within a ribbon length rant (for example, sandy clay loam ribbon length is 25 to 40 mm long). Therefore, once a consistent ribbon length is being produced, you can be reasonably sure that the correct soil texture has been identified.

(New South Wales Government, 2014)

Appendix 4

Climate Profile

Using this link to the Climate Normals Data from the Government of Canada website complete the climate profiles for the three regions listed below. You will also need to reference the this link for plantmaps.com website to get the hardiness zone.

Thunder Bay

Plant hardiness zone:

	Jan	Feb	Mar	Apr	May	Jun	Ju	Aug	Sep	Oct	Nov	Dec
Avg. Daily Max Temperature												
Avg. Daily Min Temperature												
Extreme Daily Precipitation												
Average Vapour Pressure												

Toronto

Plant hardiness zone:

	Jan	Feb	Mar	Apr	May	Jun	Ju	Aug	Sep	Oct	Nov	Dec
Avg. Daily Max Temperature												
Avg. Daily Min Temperature												
Extreme Daily Precipitation												
Average Vapour Pressure												

Your Location: _____

Plant hardiness zone:

	Jan	Feb	Mar	Apr	May	Jun	Ju	Aug	Sep	Oct	Nov	Dec
Avg. Daily Max Temperature												
Avg. Daily Min Temperature												
Extreme Daily Precipitation												
Average Vapour Pressure												

Appendix 5

ORDER FORM

Quantity	Plant Type	SKU	Product Size	Unit Price	Line Total
1	Example - Chamomile Seeds	K-3025-25G	25-G	$12.60	$ 12.60

		Subtotal		
Sales Tax	(0.13 x sub total)	13.00%	$	-
		TOTAL	$	-

Appendix 6

Plant Journal

Over the course of the semester we will be growing our little herb and vegetable garden in the classroom. It is your responsibility to keep a plant journal each week. The first few weeks won't be exciting but are the most crucial to ensure strong healthy plants as the seeds are just starting out.
Each week has 5 boxes, one for each day of the week. In each box you will record information about how you took care of your plant that week and anything you noticed (Plant growth, mold growth, etc.) Once the plant starts to grow you will start to record height.

Each box should contain information on the following:

- ☐ Did you water today?
- ☐ Measurement of the plant
- ☐ What did you notice.

Plant journals should be submitted weekly to ensure you are on the right track.

Day of the Week	What are the needs of the plants?	What is a potential solution?	Did it positively impact the problem? What could have been done differently?
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			

References

Government of Canada. (2024, 06 24). *Historical Data - Climate - Environment and Climate Change Canada*. Historical Climate Data. Retrieved July 15, 2024, from https://climate.weather.gc.ca/historical_data/search_historic_data_e.html

Government of Canada. (2024, 06 27). *Canadian Climate Normals - Climate - Environment and Climate Change Canada*. Historical Climate Data. Retrieved July 16, 2024, from https://climate.weather.gc.ca/climate_normals/index_e.html

Grant, B. L. (2021, May 16). *How To Take Care Of Seedlings - Learn About The Care Of Seedlings Once Sprouted*. Gardening Know How. Retrieved July 21, 2024, from https://www.gardeningknowhow.com/garden-how-to/propagation/seeds/seedlings-after-germination.htm

How to Start Seeds & Germinating Seeds. (2024, March 19). Gardener's Supply. Retrieved July 21, 2024, from https://www.gardeners.com/how-to/how-to-start-seeds/5062.html

How to Start Seeds & Germinating Seeds. (2024, March 19). Gardener's Supply. Retrieved July 21, 2024, from https://www.gardeners.com/how-to/how-to-start-seeds/5062.html

Huffstetler, E. (2022, July 5). *How to Make Your Own Fertilizer*. The Spruce. Retrieved July 21, 2024, from https://www.thespruce.com/make-your-own-fertilizer-1388159

myBlueprint. (n.d.). myBlueprint.ca | Home. Retrieved July 16, 2024, from https://myblueprint.ca/

New South Wales Government. (2014, December 31). *Determining soil texture using the ribboning technique*. NSW Department of Primary Industries. Retrieved July 10, 2024, from https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/164615/determining_soil_texture_using_-ribboning_technique.pdf

Planet Natural. (n.d.). Organic Gardening Since 1991 | Planet Natural Garden Supply. Retrieved July 16, 2024, from https://www.planetnatural.com/

Plant Maps. (n.d.). *Ontario Interactive Plant Hardiness Zone Map*. Plantmaps. Retrieved July 15, 2024, from https://www.plantmaps.com/interactive-ontario-plant-zone-hardiness-map.php

Royal Horticulture Society. (2020, January). *How to Identify your Soil Type*. Youtube. Retrieved July 10, 2024, from https://www.youtube.com/watch?v=Mru1ElmG7pg&t=214s

Skilled Trades Ontario. (n.d.). Skilled Trades Ontario: Home Page. Retrieved July 16, 2024, from https://www.skilledtradesontario.ca/

Vanheems, B. (2024, June 5). *Companion Planting Chart for Vegetable Garden: Tomatoes, Potatoes, and More!* | *Guide to Companion Planting*. The Old Farmer's Almanac. Retrieved July 21, 2024, from https://www.almanac.com/companion-planting-guide-vegetables