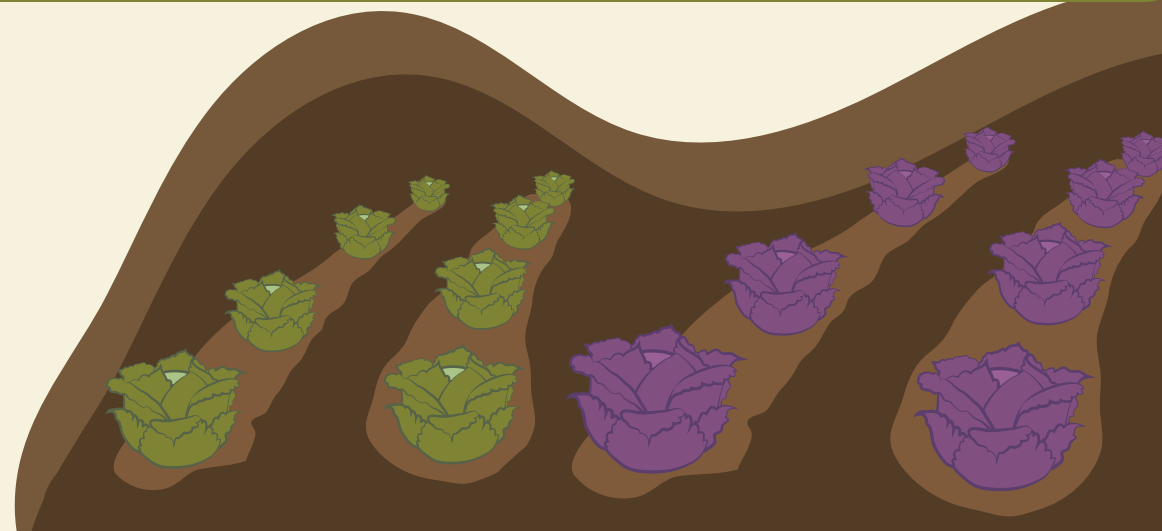



# UBC Climate-Ready Food Garden Management Plan



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# Introduction



The earth's climate is changing - droughts, floods, extreme temperatures, and shifting seasonality continue to impact crop health and yield. Climate-ready gardening is a great way to practice climate action, increase local food production, and connect with your campus community!

Think of your garden as an ecosystem - it's made up of plants, soil, insects, humans, water, nutrients, and more! Try to keep each of these components in mind as you're planning and tending to your garden.

## How to Use This Plan!

- A visual and accessible guide to support you in getting your campus food garden started or to share with beginner gardeners joining your team.
- No two food gardens are the same! To set yourself up for success, apply the guidance in this plan with the capacity and interests of your garden's caretakers in mind.



# Glossary of Key Terms

<b>Term</b>	<b>Definition</b>
<b>Climate-Ready Garden</b>	<b>Planned with evolving average temperatures and increased frequency of extreme weather events in mind.</b>
<b>Drought Tolerant</b>	<b>Ability of a plant to withstand a period of minimal soil moisture through various roots and leaf adaptations.</b>
<b>Heat Tolerant</b>	<b>Ability of a plant to withstand high temperatures while maintaining growth and production capacity.</b>
<b>Cold Tolerant</b>	<b>Ability of a plant to withstand cold temperatures and tolerating light to moderate frost without damage.</b>
<b>Pollinator-Friendly</b>	<b>A plant that offers resources to pollinators such as bees, butterflies, moths, hummingbirds, and more.</b>
<b>Native Plant</b>	<b>A native plant is a plant that grows in and is adapted to a specific geographic area.</b>
<b>Annual or Perennial</b>	<b>Annual plants complete their lifecycle within one year. Perennial plants can live for multiple years.</b>
<b>Light Requirements</b>	<b>Plants require different levels of sunlight to grow and thrive. Levels include full sun, part shade and shade.</b>

# How to Get Started

So you're  
planning a food  
garden? We're  
here to help!



## 1. Get to Know Your Site

- Monitor light, temperature, shade, and exposure to rain and wind throughout the day. Identify water sources and space for compost and garden waste.

## 2. Build up Your Soil

- Do a soil test to identify nutrient composition and possible imbalances.
- Amend your soil with compost before planting and with organic fertilizers if necessary.

## 3. Make a Crop Management Plan

- Ensure that the plan is suitable and realistic for your garden's microclimate and capacity. See planting suggestions on P.12 and P.13 for inspiration!
- Make sure to check the availability and price of seeds before you include them in your plan.

## 4. Source Locally Adapted Seeds/Seedlings

- Check out UBC Farm's Seed Donations, the BC Eco-Seed Co-op, Woodward Seed Library, Southlands Nursery, Phoenix Perennials, the Coast Salish Plant Nursery, Plan Bee Nursery, or seeds from seed swapping/trading!

## 5. Get Going and Get Growing!

- Connect with other growers on campus for support and resource sharing!

# Climate-Ready Garden Strategies

With added pressures of extreme heat, droughts, wildfires, and shifting seasonality, having strategies and plans in place can help you be more adaptable to rapid change.

Below are some techniques that can help build contingencies for various weather events and support the health of your ecosystem. Once you've reviewed these, check out the [Climate-Ready Plant List](#) and the [Planting Suggestions](#) diagrams for more inspiration!

## 1. Soil Health

## 2. Plant Selection

## 3. Crop Planning

## 4. Water Management

## 5. Community Connections



# 1. Soil Health

*Healthy topsoil forms the basis of our food systems! It acts as a global carbon sink and regulates our climate. Factors that inform its ability to sustainably support food plants include pH levels, water retention capacity, drainage abilities, biological activity, and nutrient availability. One of the most important actions you can take to facilitate these characteristics in your garden is by incorporating organic matter using the strategies below.*

## Strategies:

### 1. Applying Compost

a. High-quality compost is key to supplementing plants with nutrients before and during the growing season. Creating compost on-site is an amazing step to closing the carbon loop and reducing waste in your garden! There are plenty of DIY options such as vermicomposting, compost tumblers, or a 3-bay system where you can organize your composting materials and stages.

### 2. Cover Cropping

a. Cover cropping is when a fast-growing crop such as clover, alfalfa, or buckwheat is planted approximately a month before your region's first frost date and left to grow until the spring. Having roots in the soil all winter is a low-maintenance way to improve soil structure, encourage nitrogen fixation, and encourages healthy microbial activity! The presence of the cover crop also reduces erosion and nutrient loss that can occur with the heightened precipitation in the fall and winter months.

### 3. Minimizing Disruption

a. You can support carbon retention in your soil by leaving roots in the ground year-round! This can be accomplished through cover cropping, planting overwintering crops (e.g. cauliflower, garlic, cabbage, etc.), and incorporating perennial plants. Avoiding tilling (I.e. excessive digging or stirring) can reduce the disruption of soil organism communities and the release of carbon.

# 2. Plant Selection

*Increasing crop diversity can help food growers to withstand the effects of climate change. Having a range of plants that thrive under different conditions can give you greater security as weather patterns fluctuate, as some plants will better tolerate and survive certain conditions such as heat, drought, and cold temperatures.*

## Strategies:

### 1. Embrace the Sun and Shade

- a. If your site allows it, plant heat-sensitive crops in shady areas or under larger, more heat tolerant plants (ex. Plant lettuce between rows of potatoes). During the summer months, choose drought resilient crops to lessen water usage and preserve yields (see our plant list for more information!).

### 2. Plant Native Varieties

- a. Native plant varieties are especially well-adapted to the unique climatic conditions of your specific region. Native plants can also help to support ecological interactions with other native species like insects, birds, and small mammals.

### 3. Attract Beneficial Insects

- a. Plant flowering crops and herbs to attract pollinators and insect predators that feed on pests. Some favourites include berries, squash oregano, rosemary, and chives! Plants that support beneficial insects are great companion plants for crops that require pollination or face high pest pressures. For example, plant chives with tomatoes to attract bumblebee pollinators or plant marigolds to deter pests.

### 4. Incorporate Perennial Plants

- a. Perennial plants, shrubs and trees can have deep roots that help them to access water deeper in the soil during dry periods. Having larger and more established root systems can also help to support essential soil microbes and improve your soil's water and nutrient retention capacity.



# 3. Crop Planning

*Alongside selecting plants that are appropriate for your microclimate, crop management plays a big role in the resilience of your garden! By incorporating some of the strategies below, you can increase your harvest, extend your growing season, and support the long-term health of your soil.*

## Strategies:

### 1. Succession Planting

a. Succession planting is a strategy used to generate more consistent production by planting seeds or seedlings every 2-3 weeks in alternating rows. This is particularly useful with crops such as carrots and lettuce which you may want to harvest more regularly. By having crops at different stages of growth, when you harvest from one planting cycle, the next one will be well on its way to maturation!

### 2. Annual Crop Rotation

a. Crop rotation entails being intentional with minimizing the repetitive growth of a given crop in the same area of your garden. By taking note of planting locations each year, you can avoid depleting your soil of a given nutrient while interrupting the disease cycle that may be characteristic of certain plant families.

### 3. Shoulder Season Growing

a. Shoulder seasons vary in length and timing per region, but are generally the periods between the off-seasons (e.g. winter) and peak seasons (I.e. summer) of growing (I.e. the spring and fall). With extreme heat and drought characterizing BC summers, taking advantage of milder weather can give cool-weather crops a higher chance of success, provide overwintering plants a head start, and overall extend your harvest window.

# 4. Water Management

*Heat waves and droughts can be devastating for the health of food plants. When temperatures exceed the optimal range for a given variety there can be a disruption to pollination, root development, and overall growth. Water scarcity can exacerbate these issues, making strategies to conserve and effectively manage water resources especially important!*

## Strategies:

### 1. Drip Irrigation

a. While hand watering is an excellent option, it can be time-consuming, resource-intensive, and increases your plant's vulnerability to waterborne diseases. Drip irrigation involves installing pipes with small holes that allow water to drip onto the soil at a desired rate. These systems promote more even watering across your garden, conserve water by minimizing evaporation, and save time!

### 2. Mulching

a. Mulching is a practice of applying organic materials such as wood chips, straw, or leaves to the soil around your plants year-round. In warmer months this cools the soil and reduces the evaporation of moisture, allowing for less water to be used! In cooler months, the mulch protects the soil from erosion, insulates plants, and protects them from cold snaps or unexpected frost.

### 3. Shade Cloth

a. Shade cloth is a strategy in which a thin, light-permeable material such as row cover, cheesecloth, or burlap to reduce the amount of sunlight that reaches your plant. You can even customize the permeability of your material according to the needs of your crops! Applying shade cloth during warm periods of the growing season can conserve soil moisture and protect your plants from scorching.

# 5. Community Connections

*As climate events and extreme weather increase in frequency and severity, community connections and support networks will become more important for the resiliency of the people and plants that are part of your growing space. Connect with your community to help support food security, source drought-resilient plants and seeds, and engage in knowledge sharing to combat the effects of climate change.*

## Strategies:

### **1. Connect with Other Campus Food Growers**

- a. Connect with other food gardens on campus to share knowledge and resources. To reduce costs and meet quantity requirements try to place group orders for seeds, soil, compost, mulch, and tools!

### **2. Engage in Reciprocity**

- a. This strategy will look different for each garden! Here are some examples:
  - i. Seek out community fridges to encourage the community to interact with your garden.
  - ii. Consider establishing U-pick sections in the garden where community members can harvest food and connect with their local food system in a low-barrier way.
  - iii. Create space for native medicinal plants and connect with Indigenous communities to share the harvest.
  - iv. Dedicate some plants in your garden for wildlife by leaving varieties that have gone to seed or have started to flower for native birds and pollinators.

### **3. Reach Out to Local Farms and Businesses for Support**

- a. Local farms and garden centers can offer great resources for soil, regionally-adapted seeds, perennial plants, and garden tools. The UBC Farm is a great resource for additional information about food growing in BC and they sometimes offer seed donations.

# Climate-Ready Plant List

For a more extensive list of climate-ready plants and their growing considerations [click here](#)

↑  
Vegetables  
↓

Plant Name					Native Plant	Annual (A) or Perennial (P)	Light Requirements
<b>Egyptian Walking Onion (<i>Allium × proliferum</i>)</b>	✓	✓	✓	✓		A	Full Sun/Part Sun
<b>Walla Walla Onion (<i>Allium cepa</i>)</b>		✓		✓		A	Full Sun
<b>Nodding Onion (<i>Allium cernuum</i>)</b>		✓	✓	✓	✓	P	Full Sun/Part Sun
<b>Hardneck Garlic (<i>Allium sativum</i>)</b>	✓	✓		✓		P	Full Sun
<b>Anasazi Tepary Beans (<i>Phaseolus vulgaris</i>)</b>	✓		✓	✓		A	Full Sun
<b>Ya Ya Carrot (<i>Daucus carota</i>)</b>	✓	✓		✓		A	Full Sun/Part Sun
<b>Diamond Eggplant (<i>Solanum melogena</i>)</b>	✓	✓		✓		A	Full Sun
<b>Early Jalapeño Pepper (<i>Capsicum annuum</i>)</b>	✓		✓	✓		A	Full Sun

# Climate-Ready Plant List

For a more extensive list of climate-ready plants and their growing considerations [click here](#)

Plant Name					Native Plant	Annual (A) or Perennial (P)	Light Requirements
<b>Silverado Swiss Chard (<i>Beta vulgaris</i>)</b>	✓	✓				A	Tolerates All
<b>Cheriette Radish (<i>Raphanus sativus</i>)</b>	✓	✓		✓		A	Tolerates All
<b>Manitoba Tomato (<i>Solanum lycopersicum</i>)</b>		✓		✓		A	Full Sun
<b>Russian Blue Potato (<i>Solanum tuberosum</i>)</b>	✓	✓	✓	✓		A	Full Sun
<b>Bluecrop Blueberry (<i>Vaccinium uliginosum</i>)</b>		✓				P	Tolerates All
<b>Saskatoon Berry (<i>Amelanchier alnifolia</i>)</b>	✓	✓	✓	✓	✓	P	Full Sun/Part Sun
<b>Santo Cilantro (<i>Coriandrum sativum</i>)</b>	✓	✓	✓	✓		P	Tolerates All
<b>Western Yarrow (<i>Achillea millefolia</i>)</b>	✓		✓	✓	✓	P	Full Sun/Part Sun

↑ Vegetables  
↓  
↑ Fruits  
↓  
↑ Herbs  
↓

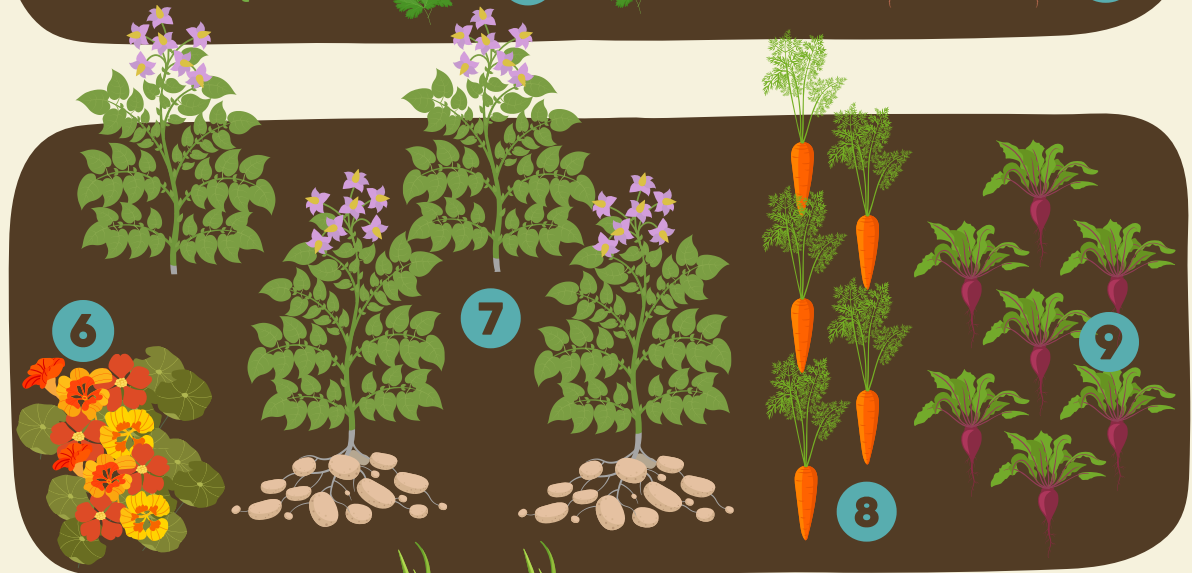
# Plant Key

- 1. Kale
- 2. Pac Choi
- 3. Santo Cilantro
- 4. Lettuce
- 5. Cheriette Radish
- 6. Nasturtium
- 7. Russet Norkotah
- Potato
- 8. Ya Ya Carrot
- 9. Beets
- 10. Early Jalapeño
- Pepper
- 11. Walla Walla Onion
- 12. Manitoba Tomato
- 13. Dolly Basil

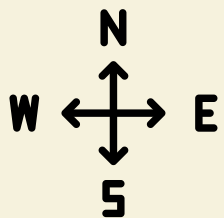
Shade  
Conditions



Partial Shade  
Conditions



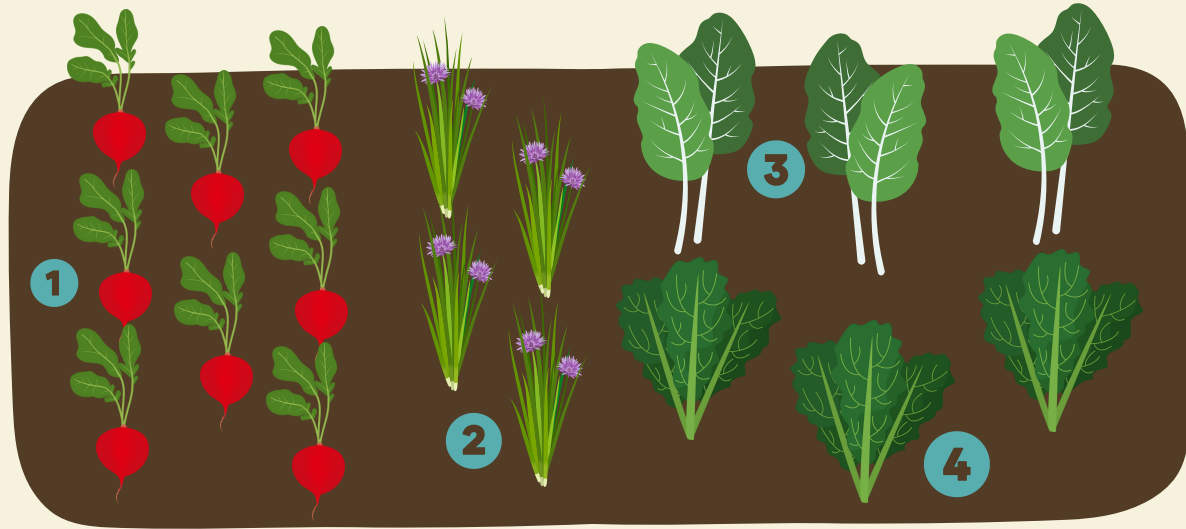
Full Sun  
Conditions



# Plant Key

1. Cheriette Radish
2. Chives
3. Silverado Swiss Chard
4. Kale
5. Lettuce
6. Russian Blue Potato
7. Walking Onion
8. Yarrow
9. Lemon Balm
10. Santo Cilantro
11. Diamond Eggplant
12. Anasazi Tepary Bush Beans
13. Sakura Tomato
14. Holy Basil

Shade  
Conditions



Partial  
Shade  
Conditions



Full Sun  
Conditions

