



BELLINGHAM FOOD BANK
GROWING GUIDE

Made possible by the Sustainable Whatcom Fund of the Whatcom Community Foundation



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About Bellingham Food Bank

Our Mission:

To reduce hunger by providing wholesome foods to those in need on an emergency or chronic basis and by educating the community on the problem of hunger.

What we do:

Bellingham Food Bank is Whatcom County's largest emergency food provider, and we have been feeding our community since 1972. We meet our mission by supplying groceries to tens of thousands of hungry Bellingham families every year. In addition, Bellingham Food Bank serves as the warehouse for more than one dozen smaller food banks throughout Whatcom County, each year receiving, storing, and distributing more than 1 million pounds of food to partner food banks.

Bellingham Food Bank also educates the community about local hunger issues. Our staff members are available to talk to schools, civic, business, and other community groups.

How we do it:

Bellingham Food Bank relies on support from the community to meet our mission. Our small staff is supported by more than 200 volunteers. Each week, the food bank rescues thousands of pounds of produce, dairy, and bread from local grocery store donors. Local food drives, gardeners, and farmers' surplus also help feed Bellingham's hungry families.

Bellingham Food Bank also receives and depends on generous monetary donations to feed our community. We purchase tons of food each month from distributors capable of accessing large amounts of surplus food. We also directly purchase food that is in highest demand such as milk, frozen protein, and baby food. Because of our purchasing power, Bellingham Food Bank can usually buy 1,000 pounds of food with \$100.

Bellingham Food Bank Agricultural Programs

Small Potatoes Gleaning Project

Gleaning is the ancient practice of gathering food left in the fields after harvest. Small Potatoes Gleaning Project takes this age-old practice and puts it into action in Whatcom County. Volunteers annually glean more than 135,000 pounds of produce from local farms and the Bellingham Farmers Market. The gleaned fruits and vegetables are then delivered to area food banks, soup kitchens, and feeding programs.

Victory Gardens

During World War II, Victory Gardens were a way for everyday folks to help with the war effort. Today most people garden for the joy of it and eat the fruits (and veggies) of their labor. But what to do with the overabundance of lettuce or carrots? Community members donate their surplus produce to the food bank to help in the fight against hunger. Produce grown in Victory Gardens helps to provide fresh and nutritious food to those who need it most.

For more information on any of these programs and to learn about volunteering visit www.bellinghamfoodbank.org, send an email to glean@bellinghamfoodbank.org, or call (360) 676-0392.

Planning Your Garden

Planning your garden with the entire growing season in mind will help you get the most out of your garden bed. It can also be a lot of fun.

The following steps will lead you through this process:

Step 1: Identify your garden goals. **Step 2:** List all the vegetables you want to grow. **Step 3:** Make a garden map.

Step #1: Identify your garden goals.

Make a list of what you want to get out of your garden. Maybe you want to grow enough tomatoes to preserve for the winter. Maybe you want to grow herbs for daily use. Maybe you want to experiment with new vegetables.

1.

2.

3.

4.

Step #2: Make a Planting List of all of the vegetables you want to grow.

What vegetables do you and/or your family like to eat? Do you want to try something new?

To make your list, fill in the first column on the next page with what vegetables you want to grow.

Then use the **Planting Guide** (page 10) to find out when you should plant each vegetable. Put this information in the “When to Plant” column of your **Planting List**.

Use the **Vegetable Guide** (page 18 - 28) to fill in the other three columns with other planting and harvesting schedule information.

Planting List

You may want to plant certain items, such as lettuce or cilantro, multiple times (succession planting) to have a steady supply.

Plant Type	When to Plant	Direct Sow or Transplant?	Time until Harvest	Spacing/Plants per Square Foot
Example: Carrots	late April - early August	Direct Sow	10 weeks	2 - 4" or 16/sq. ft.

Step #3: Make a Garden Map

Making a map can help you decide where to plant each kind of vegetable. This will also help you make the most of your garden space. Detailed planning is key and the increased yields make it well worthwhile. We recommend using the following method.

Square Foot Gardening

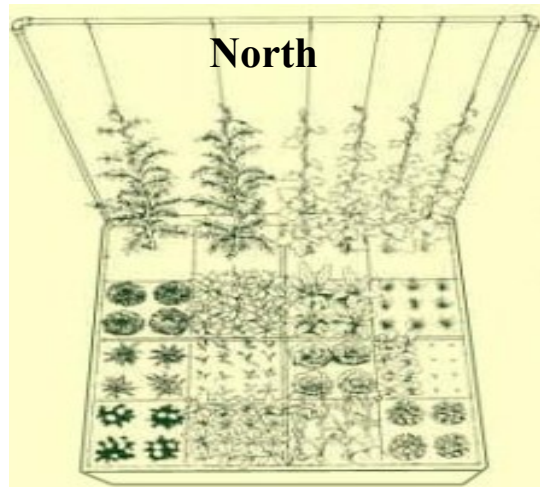
Square foot gardening uses block spacing instead of rows. Each square represents a square foot.

It's a great method to use in a small garden because it saves space and allows you to easily clear and replant a block without disturbing other areas of your garden. This method is also useful for record keeping to aid in proper crop rotation (see page 12).

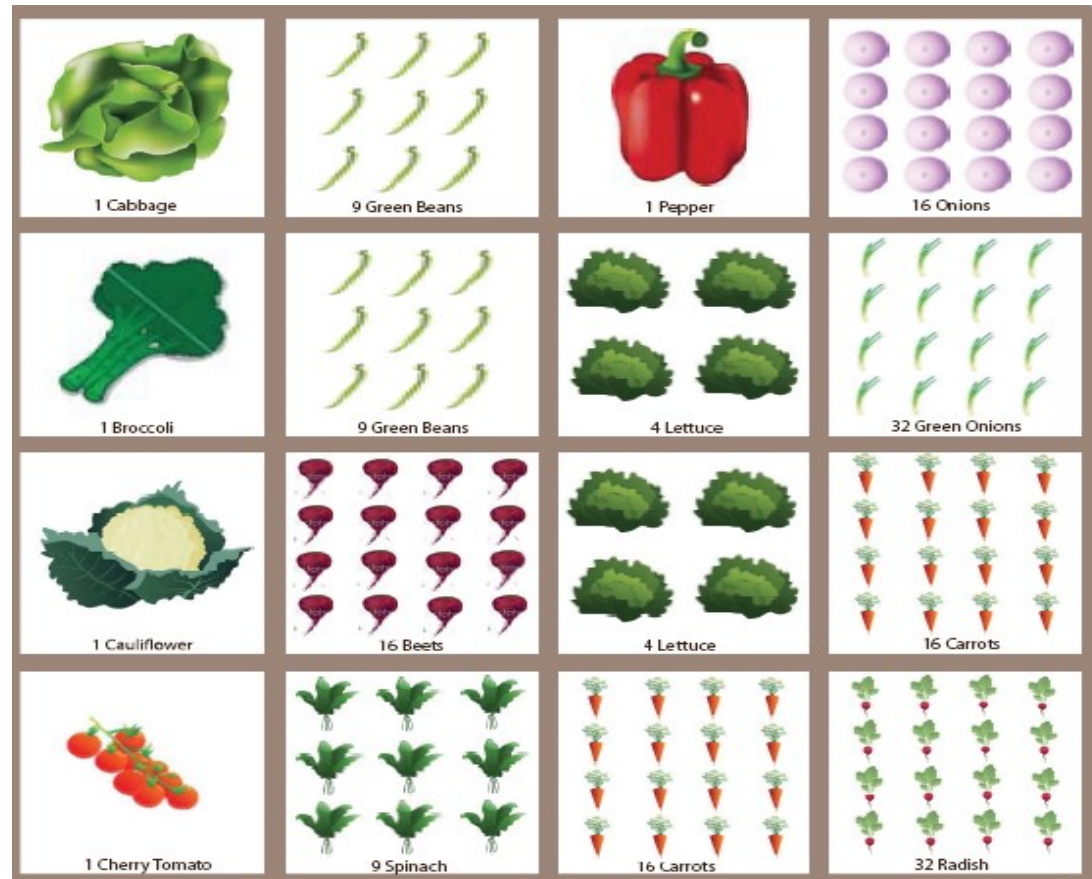
- **Use blank grid to map your garden.**
Blank grids are found at the back of this booklet.
These grids are customized for Garden Project garden beds that are 4' x 8' or 32 square feet.

**If your garden is not this size, you can draw your own grid.
Measure your garden bed, then split it up into square feet.
Draw one box per square foot.**

- **Locate North in your yard and put this on your map.**



Below is **an example** of a garden using square foot gardening method.



Tall plants like tomatoes, pole beans and climbing peas go at the north end of your garden so they won't shade out shorter plants. Using a trellis will help maximize space in the garden.

Maritime Northwest Climate and Plant Selection

Whatcom County has wet, mild winters and warm, dry summers. This climate is perfect for many plants and allows for year-round gardening. Because of mild conditions, certain plants can be grown all year long. Others, particularly heat-loving plants like peppers, tomatoes, and eggplants can be more challenging. You'll learn from experience, conversations with friends, and other resources which kinds of plants will thrive in your garden.

Seed packets and this booklet provide more information about planting dates.

In Whatcom County, the average last frost date is May 6th. To be safe, wait to plant until the second week of May.

Plant Selection and Planting

The Garden Project provides healthy plant starts and seeds to participants for two years. If you buy plant starts from other sources, choose ones that are strong, straight and green without yellowing or insect damage. Plants bought from outside stands will be ready to go right in the ground about mid May. Those from a greenhouse or other warm environments will need time to slowly adjust to the outside. Abrupt temperature changes can shock, stunt or even kill tender plants. Helping plants to adjust to the outside is a process called **hardening off**. This is accomplished by bringing plant starts outside during the day and then inside a warm environment at night. Next, leave the plants outside overnight before planting. This allows the plants to acclimate to

Sunlight

Plants, such as tomatoes, peppers, and eggplant are sun-lovers and need **full sunlight (6 - 8 hrs. of sun)**. Some plants can still grow decently in **partial sun (4 – 6 hrs. of sun)**. These plants can be good for those tricky areas of your yard or garden beds that may be shaded during part of the day.

Plants that do well in partial sun are arugula, beets, carrots, chard, kale, kohlrabi, lettuce, onions, parsnips, peas, and spinach.

Planting Seeds and Starts

You can grow many vegetables by planting seeds directly into the ground. This is called **direct sown**. Some vegetables, such as carrots and beets should only be direct-sown. Some vegetable plants need to start growing inside and then get planted outside when the weather and soil warms. This is called **transplanting**. Tomatoes, peppers, and eggplant need to be transplanted. The young plants are called **plant starts**. The chart on the next page describes you which plants should be direct-sown and which should be transplanted.

***Some important things to find out about each vegetable before planting:**

When to plant the seeds

How deep to plant the seeds

How far apart to plant the seeds

General Planting Tips

- **Watering:** Keep the soil of young plants moist, but do not over water. It's best to water just a little every day while plants are young. Water less often when they get older. Avoid getting water on the leaves.
- **Succession Planting:** Use this method for fast growing crops such as lettuce, salad mix, radish, carrots, spinach, and cilantro. Direct-sow these crops every 2 - 3 weeks to have a fresh harvest throughout the season.
- **Vining Crops:** Vegetables such as squash, cucumbers, climbing peas, and pole beans are considered vining crops. Plant on the edge of garden beds because they need extra room to spread their vines. If you use a trellis to save space, plant on the north end so you don't block sun for other plants.
- **Planting Dates:** Dates for outside planting vary depending upon where exactly your garden is located. Dates provided are guidelines. Anything planted *before* these dates is at risk of frost damage or kill.

Crop Planting Guide

common garden crops	direct-sow or transplant?	earliest to latest planting date (outside)	space between plants	seed depth	time from seed to harvest
Arugula	direct-sow	April - September	3" - 6" or 6/sq.ft	1/8" - 1/4"	6 weeks
Basil	transplant	June - July	4" or 9/sq. ft.	1/8"	6 - 7 weeks
Beans (pole)	direct-sow	May - June	3" - 4" or 8/sq. ft.	1"	7 - 10 weeks
Beets	direct-sow	mid April - mid July	4" - 6" or 16/sq. ft	1/2" - 1"	8 - 12 weeks
Broccoli	either	mid April or July	18" - 24" or 1/sq. ft	1/2"	12-14 weeks
Broccoli Raab	either	mid April or July	18" - 24" or 1/sq. ft	1/2"	7 - 8 weeks
Brussel Sprouts	either	mid May- July	24" or 1/sq. ft	1/4" - 1/2"	12 - 16 weeks
Cabbage	either	late April - July	18" or 1/sq. ft	1/4"	16 weeks
Carrots	direct-sow	late April - August	2" - 4" or 16/ sq. ft	1/4"	10 weeks
Cauliflower	either	April- July	22" or 1/sq. ft.	1/4"	14 - 19 weeks
Celery	transplant	mid May - July	12" or 1/sq. ft	NA	15 - 20 weeks
Chard	direct-sow	mid May- July	10" - 12" or 1/sq. ft.	3/4"	8 - 9 weeks
Cilantro	direct-sow	late April	1" or 12/sq. ft.	1/2"	8 weeks
Collard Greens	direct-sow	mid May- July	10" - 12" or 1/sq. ft	1/4" - 1/2"	7 weeks
Cucumbers	either	early June	18" or 1/sq. ft	1/2" - 1"	6 - 8 weeks
Dill	direct-sow	April - May	9" or 2/sq. ft.	1/4"	8 weeks
Eggplant	transplant	mid June	18" - 24" or 1 - 2 /sq. ft.	NA	9 - 11 weeks
Garlic	direct-sow	October or February	4" or 9/sq. ft.	1" - 2"	harvest in July or August
Kale	direct-sow	April - early August	8" - 16" or 1 sq. ft.	1/2"	8 - 9 weeks
Kohlrabi	direct-sow	April - early August	4" or 4/sq. ft.	1/4"	6 - 7 weeks
Leeks	either	May - July	6" or 4/sq. ft.	1/4"	11 - 12 weeks
Lettuce	direct-sow	mid April - August	6" - 12" or 2/sq. ft.	1/4" - 1/2"	7 - 8 weeks (head lettuce)
Mustard Greens	direct-sow	April- August	6" - 12" or 2/sq. ft.	1/2"	3 - 7 weeks
Onions	either	April - May	3" or 9/sq. ft.	1/2"	12 - 13 weeks
Oregano	either	May	12" or 1/sq. ft.	1/4"	15 weeks
Parsley	direct-sow	April - July	6" - 8" or 2/sq. ft.	1/4"	12 weeks
Parsnips	direct-sow	April - June	3" - 4" or 14/sq. ft.	1/4" - 1/2"	16 - 17 weeks
Peas	direct-sow	March - July	1" - 2" or 12/sq. ft.	1"	9 - 10 weeks
Peppers	transplant	early - mid June	12" - 18" or 1/sq. ft.	NA	10 - 11 weeks
Potatoes	direct-sow	late March	12" or 1/sq. ft.	2-3" & mound	7 - 8 weeks
Radish	direct-sow	March - July	2" - 3" or 16/sq. ft.	1/2"	4 - 5 weeks
Rosemary	transplant	May	12" or 1/sq. ft.	NA	12 - 15 weeks
Spinach	direct-sow	late March -mid August	2" - 4" or 9/sq. ft.	1/2"	6 - 7 weeks
Squash (summer)	either	early June	3' - 4' or 1/ 1 - 2 sq. ft.	3/4"	7 - 8 weeks
Squash (winter)	either	mid-June	4' or 1/3 sq. ft.	NA	12 - 15 weeks
Strawberries	transplant	early June	12" - 18" or 1/sq. ft.	NA	when berries are red
Tomatoes	transplant	late May - early June	24" or 1/ 1 -2sq. ft.	NA	8 - 16 weeks
Turnips	direct-sow	early May - mid-August	2" - 3" or 10/sq. ft.	1/2"	6 - 7 weeks

Direct Sowing

Large Seeds: Example: cucumbers, squash, beans, peas, chard, beets

- Make little holes where you want to plant your seeds. The holes should be no deeper than your first knuckle (about an inch).
- Put a seed in each hole. Cover with loose soil.
- Gently water the soil after planting. Watering too strongly will wash the seeds or soil away.
- Keep the top of the soil moist. You'll likely need to water once daily in the height of summer. It's best to check soil moisture before watering.

Small Seeds: Example: carrots, spinach, lettuce, radish

- With the side of your hand, make a shallow line in the soil, about ¼ inch deep.
- Sprinkle the seeds in the line. *Remember each seed is going to be a plant, so don't sow too heavily.*
- Cover the seeds with loose soil.
- *Gently* water the soil after planting.
- Keep the top soil moist.
- When the plants get their 2nd set of leaves, it's time for thinning. **Thinning** means pulling out some of the young plants so the others have room to grow. Envision how much room a mature plant will need. Then select the weakest looking plants to remove until all plants have enough room to grow to full size. As you thin, be gentle to protect the root structure of the plants you are keeping. Thin until you have the correct amount of space between plants. **Or**, you can thin as plants grow and harvest them to eat, as they are delicious and tender. If you choose this method of thinning, you will want to thin regularly until you have adequate space between each plant.

Transplanting Plant Starts

- Transplant starts during the cool of the day, such as morning or evening, to reduce shock.
- Dig a hole in the soil slightly larger than the container the start is in.
- Water the plant start well while it is in the pot. Then carefully pry the plant and its surrounding soil out of the pot. Gently pinch the bottom of the pot if the plant start isn't coming out easily.
- Place the plant and surrounding soil, roots down, into the hole. Plant the start to the depth of the first leaves.
- Fill in the remaining space with soil and *gently* pat down.
- Water the soil around the plants and avoid getting water on the leaves.
- *A note on transplanting tomatoes:* The fuzz on the stems of tomato plants will turn into roots when underground. The deeper the stem is buried, the deeper the roots will be. Bury tomato stems down to the first healthy looking leaves so that those leaves are just barely above the ground. Put a tomato cage, trellis, or stakes around the plants right after planting. It's hard to get cages over plants once they have grown very much.

Succession Planting

Many crops, such as leafy greens, cilantro, and radishes, are best grown successively, meaning they are planted many times throughout the season. For example, you could choose sections of your garden for a steady supply of salad greens. *Use your garden map and planting schedule.*

- Begin by sowing seeds for only half a section.
- Mark the date and section you sowed.
- Three weeks later (in the case of lettuce), plant the second half of the section. Mark and date (this is a good time to thin the first section).
- When the first planting is harvestable, clear it out to eat and sow more. Continue this throughout the growing season.

Crop Rotation

Avoid growing vegetables from the same family in the in the same location more often than once in 3 years period, especially Brassicas.

Rotate the place in your garden where you grow different kinds of crops each year. This helps keep pests and diseases under control and helps your soil keep a balance of important nutrients. Be vigilant with crop rotation and use old garden maps as guides.

Below is a list of vegetable plant families and the common names of popular vegetables in each family:

Alliaceae (*onion family*): chives, garlic, leek, onion

Chenopodiaceae (*goosefoot family*): beet, chard, spinach

Brassicaceae (*mustard family*): broccoli, brussels sprout, cabbage, cauliflower, bak choy, kale, kohlrabi, mustard greens, radish, rutabaga, turnip

Asteraceae (*composite family*): endive, globe artichoke, lettuce

Cucurbitaceae (*gourd family*): cantaloupe, cucumber, pumpkin, summer squash, winter squash, watermelon

Gramineae (*grass family*): sweet corn, popcorn

Leguminosae (*pea family*): Green bean, fava bean, lima bean, pea, snap bean

Liliaceae (*lily family*): Asparagus

Solanaceae (*nightshade family*): Eggplant, pepper, potato, tomato

Umbelliferae (*parsley family*): Carrot, celery, Florence fennel, parsley, parsnip

Watering Tips

- It's best to water in the early morning, both to maximize the efficiency of water used and to promote healthy flora.
- Seedlings and young plants need lots of water. Check the moisture in the soil once daily to ensure they stay moist.
- Older plants can be watered less frequently. In the heat of mid-summer, plants may need to be watered daily. If plants are looking yellow, it can be a sign they are getting too much water; if they look wilted, they aren't getting enough.
- *Water the soil at the base of the plant, not the plant itself, and avoid getting water on plant leaves.* Wet leaves can encourage fungus and other plant diseases.
- If you have a hose, use a gentle sprinkle of water rather than a strong stream. If the soil is getting pushed around, turn down the hose pressure.
- Mulch! You can cover any bare soil in your garden with leaves, grass clippings, or straw. This can help hold moisture and nutrients in soil.

Components of Healthy Living Soil

Micro-organisms

- Micro-organisms are little critters that live in your soil. There are billions of them. Most are so small you can't see them, but they are **very** important! They include bacteria, fungus, tiny insects, nematodes, and protozoa.
- They help fight pests and diseases.
- They help hold water and nutrients in the soil.
- They break down organic matter and make nutrients available for plants.

Organic Matter

- Organic matter is decayed plant and animal material.
- It helps the soil hold water and nutrients.
- It creates air space in the soil for plants and bugs to breathe.

Nutrients

- Nutrients are food for you plants.
- The main soil nutrients are Nitrogen (N), Phosphorus (P), Potassium (K), and Calcium (Ca).

Nutrient	Deficiency Symptoms (how you can tell a nutrient is missing)	Organic Amendment (what to add to the soil)
Nitrogen (N)	Lower leaves yellow, overall plant light green, growth stunted	Bone meal, coffee grounds, cottonseed meal, fish emulsion, fish meal, soybean meal
Phosphorus (P)	Foliage red, purple, or very dark green; growth stunted	Bone meal, colloidal phosphate, rock phosphate
Potassium (K)	Tips and edges of leaves yellow, then brown; stems weak	Kelp meal, greensand, granite meal, wood ashes, Sul-Po-Mag
Calcium (Ca)	Tips and edges of leaves yellow, then brown; stems weak	Kelp meal, greensand, granite meal, wood ashes, Sul-Po-Mag, eggshells, bone meal, limestone

Soil Nutrients and Fertilizers

- If your plants are growing poorly, your soil may be missing important nutrients. When a plant does not have enough of a particular nutrient, it's called a **nutrient deficiency**.
- Fertilizing is the process of adding amendments to your soil in order to achieve a healthy balance of nutrients. When you add compost or worm castings to your garden bed, you are fertilizing it. We recommend using organic fertilizers because they are made without using chemicals.
- The numbers you see on a bag of fertilizer is the N-P-K ratio, which stands for Nitrogen-Phosphorus-Potassium. Nitrogen plays the largest role in forming leaves and new plant growth. Potassium plays the largest role in shaping the fruit of a plant (tomatoes, cucumbers, peppers, etc). Phosphorus plays the largest role in establishing healthy root systems.
- Garden oriented fertilizers are readily available in ratios balanced for vegetable growing. The garden soil mix that we use from Growsource is balanced for growing great vegetables, but as nutrients are taken up by plants, it will be necessary to replace them. In the box above are some organic soil amendments (fertilizers) that you can use if your plants need nutrients.

Add Compost Regularly *Adding compost to your soil at least once a year is the best way to keep it healthy.*

Well broken down compost will provide most of what your garden soil needs to grow healthy plants. Worm castings are wonderful too!

Keep Soil Covered

When you don't have vegetables growing, cover your soil with mulch or a cover crop. This will keep nutrients in the garden and weeds out.

Compost, Fabulous Compost!

Compost is a great natural soil amendment and can be made with yard debris and kitchen scraps. It's made of decomposed organic matter from plant material and animal manure is commonly used. Compost adds important nutrients to your soil, improves soil structure and adds beneficial micro-organisms.

What to Compost: Any plant material: including green plant material, carbon material and manure (such as cow, chicken and horse). It's best if your material is chopped or shredded into small pieces. The finer the pieces the faster your compost will be finished.

Green (nitrogen) items:

fresh grass clippings, green leaves, plant stalks from garden and yard, weed leaves *without* seed heads, vegetables, fruit, other kitchen scraps, coffee grounds, crushed egg shells

Brown (carbon) items:

dried grass, dried leaves, dried plant stalks, coffee filters, newspaper (shredded), straw, old organic potting soil, hair

Do Not Compost:

diseased plants, weeds with seed heads, twigs, invasive weeds (ex. morning glory, buttercup, quack grass), pet wastes, dead animals, meat, fish, dairy products, grease, cooking oil, oily foods

Composting Basics:

There are many methods of composting. Please see the resource section at the back of this guide to learn more about the art of composting.

There are many varieties of composting bins that you can build yourself or purchase. If you want to contain the compost pile, it's recommended to have a bin that is 3 feet in each direction (high, wide and long).

- How to make your own **pallet bin**: You will need 3-4 wooden pallets. Stand them on end to form 3 sides of a square. You may use 4 and completely enclose the bin. Attach the pallets together using nails or screws. You may want a tarp to cover the top of the bin during rainy season because too much water isn't good your compost pile.

You can also build a free standing pile. For example, a hot layered pile is built directly on the ground and constructed in one session.

Creating and Maintaining your Compost Pile:

- 1) If you aren't starting your compost pile in a fully contained bin, clear the ground first.
- 2) Start with a bottom layer of coarse materials, such as corn or sunflower stalks. This will create good air flow in the pile, otherwise known as aeration.
- 3) Add a layer of **green** materials, 3–6 inches thick. Then add a layer of **brown** materials, 3–6 inches thick. Sprinkle some healthy soil into the layers. This will add beneficial micro-organisms to the mix.
- 4) Alternate the layers of each type of material until your pile is 3 feet high.

Keep each layer diverse in its range of materials, rather than having a layer just of grass or newspaper.

- 5) If available, try to keep a top layer of straw or dead leaves on your pile.

- 6) If you are using manure, layer it in between the green and carbon materials. It's a great compost activator and is full of nutrients that benefit the soil.

Moisture: The pile should be about as *moist as a wrung-out sponge*. You may need to water your pile during the summer and cover it with a tarp during the winter. If you build your pile in one shot, with material on hand, you will want to water each layer as you go.

Air Flow: The pile should always have *good air-flow*. As the compost breaks down, it gets compacted. *Turn over your pile* for aeration and to retain heat. The more often you turn your pile the sooner it will be ready for the garden.

*****Compost is ready to add to your garden when it looks like soil.**

It should be dark brown, crumbly and have an earthy smell. The original materials should be totally broken down. ***

Winter Gardening

A beautiful garden with nutritious crops can be grown during the winter in the Maritime Northwest. However, crops must be well established by the time cold weather sets in and the daylight hours decrease. It's strongly advised to plant your winter garden in the late summer. Plants will grow mostly in the fall, yet can be harvested in winter and spring. A winter garden needs very little water. Pests and weeds are also less of a problem.

You can only grow plants that tolerate the cold. Suitable winter vegetables are **cold hardy** and can grow in cool weather with limited sunlight.

Some plants that are great for winter gardening in our climate include leeks, spinach, parsnips, beets, kale, garlic, collard greens and swiss chard.

Winter crops can be direct-sown if you sow them in by the end of July or early August. Add some compost to the area before planting. You can plant your winter seeds under the summer vegetables. This will save space, and shade your seedlings from the strong summer sun. Once the crops grow a bit, add an inch thick layer of mulch over the soil to provide heat for your plants and protect them from the cold. **Mulch** can be made from dry grass clippings, dry leaves or straw. You can run the straw or leaves under a lawn mower for a more desirable size of the material.

*Keep an eye out for slugs, as they are common pests in winter gardens in the rainy Northwest.

Season extenders act like little greenhouses. They keep the soil and plants warm, which helps your winter garden grow faster and produce more food. A *cold frame* is a box with a removable top and a *cloche* is a plastic or glass covering over your garden. *Floating row cover* is agricultural cloth that raises the temperature and provides some frost protection. See the resource list (page 31) for instructional website of how to build a cloche.

Cover Crops

One easy and effective way to regenerate and protect your soil is through the use of cover crops. These are beneficial crops grown to cover the soil and to be incorporated into the garden to add nutrients and organic matter. They help prevent weed growth, soil erosion, nutrient run off and compaction caused by heavy rainfall. Cover cropping is a great way to fertilize, which lessens the need for commercial soil amending. Also, they add beautiful color to your garden. There are many cover crops that can be planted from spring to fall. In order to have a cover crop growing in the winter, sow in the fall.

To plant cover crop, sprinkle the seeds evenly over the soil, cover with a thin layer of soil and water (unless it's a rainy time of year).

Three weeks before planting your vegetable garden, use a cultivating fork or garden spade to chop up the cover crop plants and turn into the soil.

Some cover crops to grow in the Pacific Northwest:

- **Hairy & common vetch:** Sow in late August - early September. Both crops hold up well in cold weather. Vetch is a legume crop and thus provides nitrogen when turned into the soil in spring. It's also a weed suppressor and topsoil conditioner. It even attracts beneficial lady beetles.
- **Crimson clover:** Sow from August - early October and turn into the soil before it flowers in late March or April. Crimson clover needs well drained soil. This is a legume crop that provides nitrogen when tilled in, builds soil and attracts beneficial insects.
- **Fava:** A great tasting legume which can be dried or eaten when the beans are green (although be aware that some individuals have serious allergies to fava). Sow in late fall, 5 inches apart and 2 inches deep, in rows 3 feet apart. Turn into the soil in mid- to late May to add nitrogen to the garden.
- **Austrian field peas:** Sow in the fall or as soon as possible in the spring. This cover crop can be worked in late April or early May. This legume is a nitrogen source and a weed suppressor. The pea shoots are edible and quite tasty.
- **Cereal & winter rye:** Sow in late August - October. Rye suppresses weeds and prevents erosion. In the spring, turn into the soil to add organic matter. It's good to pair rye with a legume, such as hairy vetch to offset rye's tendency to tie up soil nitrogen.
- **Buckwheat:** Sow in spring or summer and turn into the soil at first sight of flowering before seeds set (about 5 to 6 weeks after germination). It grows fast and because of its density, buckwheat can overpower tough weeds. It adds organic matter to the soil when turned in to the garden and will pull up insoluble phosphorus from mineral up to the topsoil to make available for the next round of crops.

Garden Pests and Natural Management Strategies

Integrated Pest Management (IPM) is one of the best practices in organic gardening to keep pests from damaging your crops.

- **Scout:** Regularly look at your plants to know what kind of pest and how much damage they have caused.
- **Cultural Control:** Keep your plants healthy by watering regularly, plant resistant varieties, and maintain good fertility levels in your soil.
- **Biological Controls:** Beneficial insects are a natural way to control unwanted pests. Some beneficial insects kill harmful pests and others pollinate your plants, so they produce more. Flowers and herbs that provide beneficial insects with food and shelter are **insectary** plants (examples: fennel, angelica, bee's friend, chamomile, coriander, clover, mints, rosemary, thyme, and yarrow). Try to keep something flowering in your garden at all times.

Plants can tolerate a fair amount of pest damage. Your veggies and fruit don't have to look perfect to be delicious and nutritious. Learn to live with a little bit of pest damage. It's a small price to pay for a healthy garden.

A small number of pest insects are actually good for your garden, as they are a food source for beneficial insects. An **outbreak** is when one kind of pest takes over the garden in large numbers. Below are natural ways to control outbreaks for each kind of garden pest. Avoid using pesticides (they kill the good insects along with the pests and can damage soil health).

Below is a list of common pests and natural ways to control outbreaks.

Aphids – *Common on greens and brassicas*

Tiny grayish-green insects that live on green leaves and stems.

Prevention: Inspect plants regularly and remove any aphids you see. Attract beneficial insects to eat the aphids and plant nasturtiums and marigolds in your garden. These plants repel aphids and other garden pests.

Outbreak Control: Wash aphids off of the leaves with a strong stream of water from a hose. You will have to do this many times.

Blossom End Rot – *Common in tomatoes*

Turns the end of the fruit dark brown or black and makes it sunken and dry.

Prevention: Add calcium to your soil each year. Lime, calcium sulfate, gypsum or ground eggshells are good sources. Keep a regular watering routine.

Outbreak Control: Once a problem, quick fixes are difficult. To prevent it next year, add lime (unless the soil is already alkaline) and calcium to your soil.

Cabbage Worm (Cabbage Looper or Cabbage Moth) – *Common on Brassica plants (cabbage, kale, broccoli, collards, cauliflower, brussels sprouts).*

Moths are white and hover around Brassica plants. They lay eggs on the plants. When the eggs hatch, young worms eat the leaves of the plant. The worms are green and small.

Prevention: Cover Brassica plants with floating row cover (agricultural cloth), to prevent the moths from laying their eggs.

Outbreak Control: Remove cabbage worms by hand at dusk. They hang out on the underside of leaves, and their color blends in well, so look closely.

Cats

Cats are very common pests in city gardens. They like to use garden beds as a litter box.

Prevention: Use a screen, chicken wire, netting, or anything else you have that will discourage the cats from getting in and digging. Make sure there is space for the plants to grow and that you will still have easy access to the garden.

Cucumber Beetle – *Common on cucumbers and squash*

Green with black spots or stripes. They look like green lady bugs, but they are not related. Cucumber beetles make bite marks on young stems and leaves. They lay clusters of eggs on the underside of leaves that hatch into yellow larvae. The larvae tunnel into the ground and eat plant roots.

Prevention: Inspect plants often for beetles. Use row covers for protection. Plant wilt-resistant varieties if appropriate.

Outbreak Control: Remove beetles and larvae by hand. Remove and throw away infested leaves or entire plants. Don't compost infected leaves.

Cutworm

Cutworms are little caterpillars that come out at night. They eat the stems of young plants just above ground level. The adult moths are brown or black with splotches or strips.

Prevention: Before planting a new garden, remove left-over plants.

Outbreak Control: Hand-pick caterpillars after dark. This will be easiest after rain or watering. Put cardboard collars (such as toilet paper tubes) around plant stems. Coat the cardboard with onion juice for extra protection. Thick mulching around plants can help as well, but leave space around plant stem.

Deer and other large pests (example: groundhogs and rabbits)

You may have to construct a fence to keep them out of the garden. A simple and affordable fence would be with long tree branches or bamboo and netting. *You may be able to find fish netting at the marina that fishermen have discarded.*

Flea Beetle

Small, black-blue beetles. They jump like fleas when bothered. Adult flea beetles eat tiny holes in leaves of plants.

Keep your garden weed free. Plant lots of different kinds of plants.

Outbreak Control: Remove weeds and old plant debris. Rotate crop placement each year. In extreme situations, neem oil may prove effective. If using neem oil, be sure to read the pesticide label and follow instructions carefully.

Powdery Mildew – *Common on squash, cucumber and melon plants.*

Infected plants have white powder-like spots on the leaves and stems.

Prevention: Choose varieties that are resistant to powdery mildew. Plant in an area with full sun, good drainage and good air circulation. Water plants in the morning to give them the rest of the day to dry off.

Outbreak Control: Remove infected leaves to keep the disease from spreading.

Slugs

Slugs bite holes in plant leaves. They like wet weather and feed mostly at night. During the day, they prefer moist, hidden places.

Prevention: Sprinkle crushed eggshells or oyster shells around the plants. Another option is to line your garden bed with copper tape. Slugs won't cross.

Outbreak Control: If you have a slug problem, only water in the morning. Beer traps are often successful. Pour beer into a shallow container and bury it in the soil up to its rim. Place several of these around your raised-bed garden. Slugs will crawl in and drown. *If it rains, you will have to replace the beer.*

Slug-O, a commercial iron phosphate pesticide, is also effective and organic. If you use Slug-O, be sure to read the pesticide label and follow instructions carefully.

Vegetable Guide

The following is a fair selection of the garden vegetables that grow well in Whatcom County.

There are undoubtedly many more that would thrive, so experiment and have fun. Certain items, like corn, are very difficult to grow successfully in a raised bed garden because they require many plants to pollinate properly.

Planting dates are recommended time to direct sow outside and to safely transplant starts.

Read seed packages carefully since each plant variety differs.

Beans, Bush

Bush bean varieties mature earlier than pole beans, so consider one early sowing of these along with pole beans. Growing only bush beans requires you to plant 2-4 times during the season (about every 3 weeks) for a season-long supply. If late May is still wet and cold, wait to plant until early June.

Planting: direct sow

Mature plant spacing: 4" apart or 9 bush beans per square foot

Seed depth: 1"

Plant height: medium, does not require a trellis

Germination: 7-10 days

Time until harvest: 7-10 weeks

When to harvest: when they are still tender but before the pods are bulging with seed

Tips: To prevent mildew from growing avoid wetting the leaves while watering.

Nutrition: rich in vitamins A, B, C, calcium and iron

Cooking: Green beans are good raw in salads or with a dip. Steamed or stir-fried, they make a wonderful side dish. Green beans are great in soups, stews, or mixed with other veggies.

Beans, Pole

The most effective use of space is to grow pole beans (climbing varieties) on a trellis or on a stake. A single planting will supply you throughout the season. Sow as early as one week before the average last frost in spring. Plant along the bottom of a tall trellis. As they grow, train them up the trellis.

Planting: direct sow

Mature plant spacing: 4" apart or 8 pole beans per square foot

Seed depth: 1"

Plant height: tall, needs a trellis

Germination: 7-10 days

Time until harvest: 7-10 weeks

When to harvest: when they are tender but before the pods are bulging with seed

Common problems: mildew, avoid wetting the leaves when watering

Tips: Plant on the north side of the garden to avoid shading out the other crops.

Nutrition: excellent source of vitamins K, C, and manganese

Cooking: Great raw as a quick snack or with a dip. A simple and delicious method is to steam lightly for 7 minutes, toss with fresh garlic, olive oil and slivered almonds.

Beets

Earliest plantings can fail if it is too cold and wet. Sow small blocks every 3 weeks from mid-May through mid-August for a continual supply.

Planting: direct sow

Mature plant spacing: 3 - 4" apart or 16 beets per square foot

Seed depth: ½ - 1"

Plant height: short

Germination: 5 days

Time until harvest: 8 - 12 weeks

When to harvest: Pull the whole plant when the root is 3 - 6" wide. The greens are delicious and nutritious, as well as the root.

Common problems: Slugs and leaf miners like to eat the leaves, but this does not affect the beet root itself.

Tips: Beets like constant moisture. Thin your planting to ensure each beet has adequate space to grow to size. Eat the tender young thinnings.

Nutrition: excellent source of folic acid

Cooking: Cut chunks of peeled beet (and other available root vegetables), place on oiled pan in a 400 degree oven for 40 - 60 minutes, sprinkle with salt and spices. Beet greens are great sautéed with a little garlic or steamed and dressed with lemon juice. Raw grated beets are fabulous on top a salad.

Broccoli

Plant every 3 weeks, from mid-April through late June, to spread out your harvest over the season. Plant in July for the winter garden.

Planting: direct sow or transplant

Mature plant spacing: 12 - 24" apart or 1 broccoli per square foot

Seed depth: ¼"

Plant height: medium

Germination: 4 - 7 days

Time until harvest: 14 weeks

When to harvest: Cut the broccoli head when it's firm and tight (before it starts to flower).

Tips: After your initial harvest, leave the plant in the garden. It will produce lots of little side shoots that grow on the side of the stem.

Common problems: aphids, cabbage moth

Nutrition: Excellent source of Vitamin C, A, folic acid and dietary fiber

Cooking: Sprinkle lemon juice and sesame seeds over lightly steamed broccoli for a side dish. Try tossing with pasta or adding to omelets.

Brussels Sprouts

Sow in one planting mid May - early June. This crop matures all season long and is ready for harvest in the fall. It is sweeter after a frost.

Planting: direct sow or transplant

Mature plant spacing: 18 - 24" apart or 1 plant per square foot

Seed depth: ¼ - ½"

Plant height: medium

Germination: 6 - 9 days

Common problems: aphids, cabbage moth

Time until harvest: 12 - 16 weeks

When to harvest: cut or twist off the buds when they are firm

Nutrition: excellent source of vitamin K and C.

Cooking: Steam for 5-10 minutes, add butter & salt.

Cabbage

Early varieties can be planted in late April. All others can be planted from mid-May until mid-July. Plant every 3 weeks for a continual harvest.

Planting: direct sow or transplant

Mature plant spacing: 18 - 24" apart or 1 cabbage per square foot

Seed depth: ¼"

Plant height: medium

Germination: 5 days

Time until harvest: 16 weeks

When to harvest: Cut the entire head once it feels firm.

Common problems: aphids, cabbage worms, slugs

Tips: Savoy varieties are best in the Northwest, as they are very cold-hardy and productive. To avoid pest problems and disease, avoid planting members of the Brassica family (cabbage, broccoli, collards, kale, Brussel Sprouts, cauliflower, etc) in the same spot 2 years in a row. They are heavy feeders.

Nutrition: excellent source of Vitamin C, fiber, iron, beta-carotene and potassium

Cooking: Shred cabbage to make a simple coleslaw salad. Add to your favorite wrap, sandwich or stir-fry.

Carrots

Carrots can be sown at a 3 week intervals from late April - early August. Keep soil moist and weed-free after planting. Do not transplant carrots.

Planting: direct sow

Mature plant spacing: 2 - 4" apart or 16 carrots per square foot

Seed depth: ¼ - ½"

Plant height: short

Germination: 6 days

Time until harvest: 10 weeks

When to harvest: Pull out the plants with the largest tops. If tops are rip off as you harvest, loosen the soil around them first with a shovel.

Common problems: carrot rust fly, maggots

Tips: Carrots like constant moisture, especially when young. Try using floating row cover through the season to prevent pest damage.

Nutrition: Excellent source of vitamin A & K

Cooking: Raw shredded carrots make great additions to salads. To cook, sauté or steam sliced carrots for a few minutes. Add ginger or garlic or a kick.

Cauliflower

Plant in late April - mid July. A crop seeded in mid-July is easier to grow and can be harvested in the fall or winter.

Planting: direct sow or transplant

Mature plant spacing: 12 - 24" apart or 1 cauliflower per square foot

Seed depth: ¼ - ½"

Plant height: short

Germination: 6 days

Time until harvest: 14 - 19 weeks

When to harvest: Cut the whole head when firm and tight (before the "curds" begin to separate).

Common problems: root fly maggot

Tips: To prevent pest and disease problems, avoid planting members of the Brassica family (cabbage, broccoli, collards, kale, Brussel Sprouts, cauliflower, etc) in the same location 2 years in a row.

Nutrition: Excellent source of Vitamin C, Folic Acid, and Fiber.

Cooking: Sauté cauliflower with garlic, minced ginger and soy sauce or try it steamed and topped with melted cheese.

Cauliflower *continued*

Nutrition: Excellent source of vitamin C, folic acid and fiber

Cooking: Sauté cauliflower with garlic, minced ginger and soy sauce or try it steamed with melted cheese.

Celery

Plant celery in well composted and prepared beds. Transplant starts fairly close together as dense growth will help shade out weeds and keep soil moist and cool. Add compost and organic fertilizer to the soil below each plant. As they mature, thin as needed.

Planting: transplant

Mature plant spacing: 12” apart or 1 celery per square foot

Seed depth: ¼”

Plant height: short to medium

Germination: 15 - 21 days

Time until harvest: 12- 17 weeks. Harvest before first frost.

When to harvest: Harvest when stalks are long. Start with the outer stalks or harvest entire plant cutting below the crown.

Nutrition: excellent source of vitamin C and a very good source of potassium

Cooking: Add chopped celery to tuna fish or chicken salad. Enjoy the playful tradition of “Ants on a Log” by eating nut butter on celery stalks topped with raisins. Celery tops are delicious in soup and stock.

Chard (Swiss Chard)

A good green to grow all year in the Pacific Northwest. Plant from end of April - July. A few plantings, spaced every two months will supply you with greens throughout the growing season and into the winter.

Planting: direct sow

Mature plant spacing: 10 - 12” apart or 1 chard per square foot

Seed depth: ½”

Plant height: medium

Germination: 7 - 14 days

Time until harvest: 8-9 weeks

When to harvest: Harvest the outer leaves as they mature and allow the rest of the plant to keep producing.

Common problems: leaf miners

Tips: Chard seed capsules often contain two or more seeds. If more than one germinates, promptly snip off all but the strongest sprouts at the soil line.

Nutrition: excellent source of vitamin K, C, A, E, magnesium, potassium, iron

Cooking: Steam or sauté chard. Try tossing with pasta, olive oil, lemon juice and garlic. You can also use chard in place of, or in addition to, spinach when preparing lasagna, omelets, and other dishes.

Collards

This crop is a great hearty green leaf vegetable crop that can stand up to cold temperatures. To harvest greens well throughout the fall and into the winter plant once in early June and again in late June.

Planting: direct sow

Mature plant spacing: 12 - 16" apart or 1 plant per square foot

Seed depth: ¼ - ½"

Plant height: medium

Germination: 6 days

Time until harvest: 7 weeks

When to harvest: Cut the large outer leaves, which allows the smaller, inner leaves (also the top of the plant) to keep growing.

Common problems: cabbage worms, aphids and slugs

Tips: In a mild winter, collards will continue to produce. To keep the crop healthy, be sure to feed with compost and mulch to protect from cold.

Nutrition: excellent source of vitamin A, C, manganese, folic acid, and calcium

Cooking: Serve steamed collard greens with black-eyed peas and brown rice for a Southern inspired meal. Great to use as a wrap. Another fun way of cooking is to roll a bunch of leaves tightly and cut the roll. You'll end up with long strips, steam for 5 minutes and eat like pasta.

Cucumbers

Works well with a trellis or climbing a 4 - 5 foot high fence of chicken wire. If you are not growing them vertically, leave ample room to sprawl out on the ground. Plant seeds or starts once, in early June, when the soil has warmed up. Be careful not to disturb the roots of these seedlings when transplanting.

Planting: direct sow or transplant

Mature plant spacing: 18" apart

Seed depth: ½ - 1"

Plant height: tall, if trellised; otherwise, spreading on ground

Germination: 3 - 4 days

Time until harvest: 6 - 8 weeks

When to harvest: Harvest when they are about 6" long. Larger cucumbers will be tough and bitter. The more you pick, the more they produce.

Common problems: powdery mildew, cucumber beetle

Tips: Cucumbers like a sunny location with well drained soil. Once they start producing, check regularly since they grow fast!

Nutrition: very good source of vitamin C

Cooking: A simple Greek salad is always a hit. Toss cubed cucumber and tomatoes with olives, feta cheese, and a Balsamic dressing.

Garlic

Select healthy looking bulbs for planting. Most varieties are planted in October - November and are ready to harvest in July.

Planting: direct plant *individual cloves with skins on*

Mature plant spacing: 4" apart or 9 garlic bulbs per square foot

Clove depth: 2" (pointed end up)

Plant height: medium

Germination: 5 - 7 days

Time until harvest: 9 months, harvest June - July

When to harvest: Pull the whole plant when the leaves turn brown or after flowers form. Hang to dry in a cool, dry area.

Common problems: Garlic is prone to rot and rust. Avoid planting in the same area as the previous year, and be sure to use healthy seed.

Garlic *continued*

Tips: Keep well weeded. If you are growing a hard neck variety, snip off the flower buds, known as scapes. This will allow the plant to put energy to bulb growth rather than flower and seed production. Scapes are delicious when grilled or sautéed.

Nutrition: excellent source of Manganese and a very good source of vitamin B6 and C.

Cooking: Garlic is great with any sauté, sauce, soup and even in mashed potatoes! It's most beneficial for your health eaten raw.

Kale

Enjoy fresh kale all year by planting from late March - mid August. If the winter is not too severe, kale will produce into the following spring.

Planting: direct sow

Mature plant spacing: 8"- 16" apart or 1 kale per square foot

Seed depth: ½"

Plant height: medium

Germination: 5 - 7 days

Time until harvest: 8 - 9 weeks

When to harvest: Harvest outer leaves as they mature, leaving the rest of the plant to keep producing.

Tips: When it starts to go to seed, the young flowering stalks (raab) are delicious and tender. This usually happens in spring from winter garden crops.

Common problems: aphids, cabbage worm, flea beetle

Nutrition: excellent source of vitamin A, C, manganese and a very good source of calcium.

Cooking: Sauté kale with fresh garlic and olive oil, sprinkle with lemon juice and/or parmesan cheese before serving. Try tossing with pasta or topping pizza with steamed kale. Kale is wonderful raw. Take the leaf off the stalk and chop very finely. Dress with olive or flax oil, lemon juice and tamari.

Kohlrabi

For a summer harvest, sow this crop of the Brassica family after danger of a hard frost. For winter or spring crop, sow in mid summer.

Planting: direct sow

Mature plant spacing: 4" apart or 4 Kohlrabi per square foot

Seed depth: ¼"

Plant height: short

Germination: 6 – 9 days

Time until harvest: 6 - 7 weeks

Common problems: cabbage worms and club root

Tips: Kohlrabi prefers well drained, fertile soil high in organic matter. This heavy feeder also needs plentiful, constant moisture.

When to harvest: When bulbs are roughly 2 - 3" wide for the good mild cabbage flavor. Harvest foliage when young and tender.

Nutrition: very good source of dietary fiber, vitamin C, vitamin B6, potassium and manganese

Cooking: Thin slices, wedges, strips or cubes of kohlrabi can be sautéed by themselves or along with other vegetables. Also great raw and in soup.

Leeks

In early May - July plant by seeds. Remove the top ½ inch of soil, sprinkle the seeds, and then sprinkle the soil back over the seeds. Leeks benefit from the addition of compost into the soil. Certain varieties of leeks can be left in the ground through the winter and harvested when needed.

Planting: direct sow

Mature plant spacing: 4 - 5" apart or 4 leeks per square foot

Seed depth: ¼"

Plant height: medium

Germination: 7-10 days

Leeks continued

Germination: 7 - 10 days

Time until harvest: 11 - 12 weeks

When to harvest: Harvest when the stems are 1"- 2" thick. Some varieties can be left in the ground during the winter and harvested in early spring.

Tips: Leeks prefer sun and a rich, well drained soil. Keep the soil moist during early stages of development and lessen the watering as they mature.

Nutrition: very good source of manganese, vitamin C and iron

Cooking: Leeks enhance the taste of many dishes and adds subtle flavor to soups and veggie stir fries. Potato leek soup is a favorite to many.

Lettuce

Seeds can be sown at 10 day intervals starting in mid-April. When it gets hot, lettuce tends to "bolt" or send up its seed stalks. Bolting lettuce is bitter.

Planting: direct sow

Mature plant spacing: 6"- 12" apart or 2 lettuce per square foot. If you are growing lettuce for young salad greens sow closer together.

Seed depth: ¼" - ½"

Plant height: short

Germination: 7 - 14 days

Time until harvest: 7 - 8 weeks (head lettuce)

When to harvest: Harvest the whole head when it feels firm. For salad harvest individual leaves, but be sure to leave young leaves so the plant can keep growing.

Common problems: slugs

Tips: Lettuce does not grow well in the hottest part of the summer. It will begin to develop a stalk, bolt and take on a bitter taste.

Nutrition: very good source of vitamin A, C, K, thiamin, riboflavin, vitamin B6, folic acid, iron, potassium and manganese

Cooking: Give sandwiches extra crunch (and nutrients) by garnishing with lettuce leaves. What can be better than a fresh salad right from your garden?

Mustard Greens

For an early summer crop plant in April. For a fall harvest plant in late July or August.

Planting: direct sow

Mature plant spacing: 6"- 12" apart or 2 mustards per square foot. If you are growing mustard for young salad greens sow closer together.

Seed depth: ½"

Plant height: medium

Germination: 4 - 5 days

Time until harvest: 3 weeks (baby); 6 - 7 weeks (full size)

When to harvest: Smaller leaves (3"- 5") are great for salads. Larger leaves (6" - 18") are cooked and used in recipes featuring leafy greens. Simply snap off the outer leaves when they reach the desired size.

Common problems: Insects and animals avoid them, so you won't have to worry about fighting the rabbits over this one.

Tips: Two factors to consider when planning for mustard. This is a very fast growing crop and many varieties are colorful and bright.

Nutrition: excellent source of vitamin A, C, E, folic acid and calcium

Cooking: Young mustard greens add spice to green salads, pasta salads and sandwiches. Sauté to reduce the spiciness, add nuts & lemon juice. Be warned they can be overpowering and hot if used alone or in large quantities, but many mustard lovers enjoy the kick they deliver.

Onions

Plant seeds or starts from late April to early May. If you start with a pot full of seedlings, carefully separate them into individual plants.

Planting: direct sow or transplant starts and sets

Mature plant spacing: 3"- 5" apart or 9 onions per square foot

Seed depth: ¼" - ½" **Start depth:** ½" **Set depth:** 1" (sets are onions that have reached about one inch in diameter)

Germination: 4 - 5 days

Plant height: short

Time until harvest: 12 - 13 weeks

When to harvest: For storage onions, harvest when the tops fall over. This is a sign that the bulb has matured and is ready for harvest. Store in a dry, cool, dark place to cure. Remove the tops when they dry. For fresh green onions, pull the entire plant when the leaves are green and the bulb is finger size. For fresh onions, pull when the leaves are still green, and the bulbs are a desirable size.

Tips: All onions like fertile, well-drained soil. Before planting, loosen the soil and add some compost.

Nutrition: very good source of vitamin C and fiber

Cooking: Sautéed onions are so versatile that they can be added to most any dish. They are also a great addition to a veggie roast.

Parsnips

Even though this root crop needs a fairly long season to mature, they are well suited in the Northwest. Plant from April - June.

Planting: direct sow

Mature plant spacing: 3" - 4" apart or 14 parsnips per square foot

Seed depth: ¼" - ½"

Plant height: short

Germination: 21 - 28 days

Time until harvest: 16 - 17 weeks

When to harvest: Harvest as you would carrots. After a few frosts, their starches are converted to sugars and sweeten their flavor.

Nutrition: very good source of dietary Fiber, vitamin C, K, folic acid and manganese

Cooking: Place peeled and diced parsnips seasoned with broth, apple or orange juice and herbs in oven and bake for 20 - 30 minutes. They have a buttery and sweet flavor when cooked.

Peas

Climbing varieties save space since they grow vertically on a trellis and they don't require successive plantings. Try delicious snap pea or snow pea varieties that have an edible pod and are eaten fresh. Shelling peas are removed from their pods before eating and are great for preserving. Plant from March - June. July planting will bring a fall harvest. Note, peas don't thrive in the hot summer months.

Planting: direct sow

Mature plant spacing: 1" apart or 8 - 12 plants per square foot (they don't mind being close)

Plant height: tall

Seed depth: 1"

Germination: 14 days

Time until harvest: 9 - 10 weeks

When to harvest: Harvest entire pod once peas begin to bulge in their pods.

Tips: Be aware of soil moisture. Peas should never be water logged. On the other hand, don't let the soil dry out when they are germinating.

Nutrition: very good source of vitamin K, C, B1, manganese and fiber

Cooking: A fresh delight in the summer. Try a light sauté and keep crisp.

Peppers

This heat loving crop needs to be transplanted here in the Pacific Northwest. Transplant early June. Early maturing varieties will do the best in this area.

Planting: transplant

Mature plant spacing: 18” apart or 1 pepper per square foot

Plant height: medium

Time until harvest: 10 - 11 weeks from transplanting

When to harvest: Give the fruit a little squeeze. If the pepper is firm you can pluck it. Size and color at maturity will vary by plant variety.

Common problems: aphids, leaf miners, slugs

Nutrition: excellent source of vitamin C, A, K, and B6

Cooking: For fajitas, sauté peppers with onions and garlic. Sprinkle with a pinch of salt, sugar and chili powder. Serve in tortillas with cheese, chicken, tofu, avocado and/or beans. Wonderful for a quick snack and colorful on a veggie plate.

Radish

The radish is one of the easiest, quickest growing crops you can grow. Plant every 2 weeks from March - July for fresh radishes all season long.

Planting: direct sow

Mature plant spacing: 2”- 3” apart or 16 plants per square foot

Seed depth: ½”

Plant height: short

Germination: 3 - 7 days

Time until harvest: 4 - 5 weeks

When to harvest: Pull the entire plant when the radish bulb looks to be slightly less than 2” across.

Common problems: flea beetles

Tips: Radishes require cool temperatures and plenty of water. If they don’t get enough water they turn woody. Hot weather will cause them to bolt.

Nutrition: excellent source of vitamin A, C, calcium, potassium and phosphorus

Cooking: Slice and add to fresh in salads or veggie platter. Use as a garnish in soup or sushi. Pickled radish is delicious too.

Potatoes

Potatoes are planted from *disease free* “seed potatoes” (small taters saved from the previous year) or “seed pieces” (sections with 1 -3 eyes). If you cut seed potatoes use those larger than a chicken egg and make sure they sit out for 24 hour before planting so the cut side can callus over. Plant these in the ground in late March once soil has dried. Plant in an area that gets at least 6 hours of sun and has good soil fertility. Each plant yields 2 -10 lbs.

Mature plant spacing: 12” apart or 1 plant per square foot

Seed depth: 2”- 3”

Plant height: medium

Time until harvest: Young, small potatoes can be harvested 7 - 8 weeks after planting. If you are growing for storage, wait for the foliage to turn brown.

When to harvest: In late fall, when leaves begin to dry, dig up the entire plant. Remember to root around the area to find all the little taters.

Tips: When the plants are about 1’ tall, mound up soil around the plant, creating a hill with just the upper leaves showing.

Nutrition: Potatoes are a very good source of vitamin C, B6, dietary fiber, protein and lots of other minerals.

Cooking: Boil, steam or roast until tender. Add to a fall or winter medley and roast with leeks, onions, beets, carrots, parsnips, and/or winter squash. Play in the garden by planting different varieties. There is a whole world of tater to explore with different flavors, shapes, colors and sizes.

Spinach

A great cool weather crop. For a steady supply, make small frequent plantings from late March - June. Sow again in late July - mid August for a fall crop.

Planting: direct sow

Mature plant spacing: 2" - 4" apart or 9 plants per square foot

Seed depth: ½"

Plant height: short

Germination: 7 - 14 days

Time until harvest: 6 - 7 weeks

When to harvest: Cut or pluck the outer, larger leaves. This allows the inner leaves to continue to grow.

Common problems: Spinach seed doesn't store well, so use fresh seed every year. Some other problems are leaf miners and bolting in heat.

Tips: Spinach likes cool temperatures and rich, well cultivated and moist soil. Hot weather and long days trigger spinach to bolt (send up a seed stalk).

Nutrition: excellent source of vitamin K, A, C, B2, B6, iron, calcium, potassium and folic acid

Cooking: Add layers of spinach to your next lasagna recipe. For a salad, try fresh spinach with arugula, goat cheese, grapes and toasted sunflower seeds.

Summer Squash: Zucchini, Yellow Crookneck, Pattypan, etc.

Plant after the soil has warmed up (early - mid June). Mound soil in center of 3' x 3' space about 4" high, plant 1 - 2 seeds in center of mound.

One or two mounds usually provide more than enough squash for most families.

Planting: direct seed or transplant

Mature plant spacing: 1' - 2' apart or 1 squash plant in a 3' x 3' block **Seed depth:** ½" - 1"

Plant height: medium

Germination: 6 - 10 days

Time until harvest: 7 - 8 weeks

When to harvest: An ideal squash is 4" - 8" long and shiny. Squash is famously productive and will bear fruit throughout the growing season.

Tips: Summer squash doesn't keep well after harvesting, so eat them quickly or share with your friends. This crop does best in full sun.

Nutrition: excellent source of manganese and vitamin C

Cooking: To make squash pizzas, slice summer squash and top with sauce & cheese, broil in oven for 5 - 10 minutes. What to do with those large zucchinis that got a little out of hand? Cut the large zucchini in half, hollow out, add cooked rice, other veggies and black beans. Top with cheese and bake for a half an hour at 350 degrees.

Tomatoes

To develop mature fruit in Whatcom County, tomatoes must be transplanted. Transplant outside or in a greenhouse in late May - early June.

Indeterminate are vining varieties that need to be caged and pruned back to the best 3 - 4 leaders. It's best to cage them when they are small.

Determinate varieties don't need to be pruned. They are bushy and compact. Withholding water after mid-August will force the vines to ripen more fruit.

Removing all young flower clusters after mid-September will help the remaining fruit ripen as well.

Planting: transplant

Mature plant spacing: 1 tomatoes in a 2' block

Seed depth: ¼" if seeded indoors; transplant starts outside to garden. Plant up to the first set of leaves. All of the little hairs on the stem will become roots.

Plant height: tall

Germination: 5 - 10 days

Time until harvest: 8 - 11 weeks

Tomatoes *continued*

When to harvest: There are so many different varieties and colors of tomatoes. Watch for the colors to brighten and fruit to firm.

Common problems: blossom end rot, late blight

Tips: Add calcium to the soil before planting. Do not allow moisture levels to fluctuate too much – this will help prevent cracking and late blight. Harvest any unripe fruit before the first frost and ripen indoors.

Nutrition: excellent source of vitamin C and A

Cooking: Add tomatoes to sandwiches, salads and pastas. To make salsa fresca, finely chop 3 ripe tomatoes, 1 onion, 2 minced cloves of garlic, 3 fresh jalapeno peppers (seeds removed and finely chopped), 2 tbsp. of fresh chopped cilantro, 1 tbsp. lime juice, 1 tbsp. olive oil and sea salt to taste.

Turnips

Rich soil and cool temperatures grow the perfect turnip. You can plant every 3 weeks from early May - mid-August for a continual supply.

Planting: direct sow

Mature plant spacing: 2” - 3” apart or 10 turnips per square foot

Seed depth: ½”

Plant height: short

Germination: 7 - 14 days

Time until harvest: Small turnips, which are the most tender, can be harvested in 4 weeks. Full-sized turnips take 6 - 7 weeks to mature.

When to harvest: Harvest greens when they are long enough to pick and when the roots are the desired size.

Common problems: cabbage maggots, cabbage worms, cutworms, club root

Tips: Good growing conditions, crop rotation and the use of disease resistant varieties are the best defense against Brassica family crop problems.

Nutrition: Turnip roots are a good source of fiber, vitamin C and manganese. The greens are a great source of vitamin A, C, E, B6, fiber, and calcium.

Cooking: Peel turnips first, then stir-fry thinly sliced turnips until they are crisp-tender. Try mashed turnips and prepare like you would mashed potatoes! Sauté the greens with other greens such as chard. Young small turnips are tender and delicious raw, sliced into a salad or eaten alone.

Winter Squash: Acorn, Pumpkin, Butternut, etc.

In the Pacific Northwest, it's best to transplant winter squash because it requires a long growing season. Set out plant starts a week or two after all danger of frost has passed. Winter squash will mature in the fall. They are heavy feeders and will benefit from extra nutrients at the time of planting.

Planting: transplant

Mature plant spacing: 1 - 2 plants 4' apart

Plant height: tall if on a trellis; otherwise medium

When to harvest: Harvest in fall, before the first frost, which usually occurs in October. The skin should be tough enough so you cannot cut it with a fingernail. Signs of maturation are different for each variety but for many winter squashes signs of maturity is the color brightening.

Common problems: aphids, cucumber beetles, powdery mildew

Tips: Plan ahead because winter squash really sprawl. Plant in the corner of the raised bed and allow to cascade onto the yard. Winter squashes with smaller fruit (like sugar pie pumpkins or carnival squash) can be grown on a trellis. Winter squash like full sun and regular watering. Mulch around the plant to retain soil moisture and keep weeds in check.

Nutrition: excellent source of vitamin A, iron, fiber, beta carotene, potassium and niacin

Storage: Set ripe winter squash to cure in a warm and dry place for a week or two. This will help their skins to seal and stems to dry. Then move to a cool dry place for storage. Wait three weeks after storing them before cooling to allow the sugars to develop.

Cooking: Bake cubes of winter squash, 30-60 min and add to favorite soup or add to a roasted vegetable medley, or serve whole/mashed and dress with cinnamon and maple syrup or a little butter, salt and pepper.

Local Gardening Resources

- **Chuckanut Center**

Chuckanut Center is an organization whose goal is to renovate and revitalize the historic caretaker's house at Fairhaven Park and offer the space for community members to practice and teach gardening, food preservation skills, seed saving, medicinal plant preparation and other self-reliance skills. Supporters are Bellingham neighbors, builders, gardeners, business owners, and educators who care about resilient communities.

www.chuckanutcenter.org

- **Cloud Mountain Farm Center**

Cloud Mountain, a nonprofit community farm center dedicated to providing hands-on learning experiences to aspiring farmers, experienced farmers and home gardeners. They have 35 years' experience, and work to keep our local food system healthy and thriving. At Cloud Mountain they conduct field trials to test different varieties and growing systems of fruit and vegetables in an ongoing effort to discover what grows well in our region and to expand farm and garden productivity for a year-around, healthy food supply. They share knowledge and experiences in workshops and events and offer an opportunity for our community of farmers and gardeners to exchange information.

www.cloudmountainfarmcenter.org 360.966.5859

- **Community to Community Development**

C to C Development is a women-led, place-based, grassroots organization working for a just society and healthy communities. Committed to systemic change and to creating strategic alliances that strengthen local and global movements towards social, economic and environmental justice. They use inclusive strategies to empower under-represented peoples to have an equal voice in decision making processes, develop cross-cultural awareness, restore justice to food, land and cultural practices, and promote community relationships around self-reliance.

www.foodjustice.org 360.738.0873

- **Common Threads Farm**

Common Threads is on a mission to connect young people to healthy food through hands on, seed to table experiences. They also have after school and summer programs. The summer camp takes place at a productive urban farm. **The Common Threads School Garden Collective** was born of the recognition that school gardens, though relatively easy to start, are more difficult to sustain over the long run in ways that are meaningfully connected to the classroom, the cafeteria and the community.

www.commonthreadsfarm.org 360.927.1590

- **REsources for Sustainable Communities**

Empowers children and adults in the Pacific Northwest region to do all we can to protect our home. By providing key information, citizen trainings and workshops, and volunteer-led field programs, RE Sources helps community members actively safeguard marine waters, rivers, lakes, beaches and air. They work to promote healthy, prosperous communities, living in balance with the natural world. RE Sources promotes sustainable communities through recycling, education, advocacy, and conservation of natural resources. RE Sources Re Patch community garden models urban agriculture.

www.re-sources.org 360.733.8307

- **Sustainable Connections**

Promotes and participates in the co-creation of sustainable community in Bellingham and the surrounding bioregion and partners with other groups and individuals. To reach the goal of Sustainability, the organization advocates the strategy of relocalization - becoming self and community-reliant (not self-sufficient) at the local level and rebuilding communities based on the local production of food, energy, and goods as well as the relocalization of governance and culture. Relocalization includes a firm commitment to reducing consumption and improving environmental and social conditions. Their Food and Farming Program produces the **Whatcom Food and Farm Finder** which includes a farm map of Whatcom County, information about farm stands, farmers markets, and ways to buy fresh, local produce directly from the farms that grow it. The Whatcom Food and Farm Finder also has information on restaurants and retailers that purchase from local farms. On their website you can find local event listings and sign up for email newsletters.

www.SustainableConnections.org

360.647.7093

- **Tilth Alliance**

This agency inspires and educates people to grow food organically, conserve natural resources and support local food systems in order to cultivate a healthy urban environment and community. **The Garden Hotline** provides information and guidance from educators at no cost to home gardeners and landscape professionals. *Their website is full of great resources and links.*

www.seattletilth.org

The Garden Hotline: 206.633.0224 Monday through Saturday 9 a.m.-5 p.m.

- **Transition Whatcom**

This is a community networking site for those interested in helping achieve a vision of resilient and more self-reliant communities throughout Whatcom County with a local food supply, sustainable energy sources, a healthy local economy, and a growing sense of vitality and community well-being. Their website has an extensive local resources listing.

www.transitionwhatcom.ning.com

- **Washington State University (WSU) Whatcom County Extension**

Agriculture and Gardening Information, 4-H Program, Composter/ Recycler Training, Master Gardener Program and Community First! Gardens Program. The CFG program provides financial and resource support for many community gardens. Their mission is to support neighborhoods in creating and maintaining community gardens in which residents can grow their own food. They provide educational workshops, resource material kits and mini grants to community gardens. In addition, the program partners with the WSU Master Gardener Program and provides garden mentoring for local community gardens.

Diagnostic Plant Clinics and Cultivating Tips are offered weekly for the public to bring sections of diseased plants or pest samples in closed plastic bags- for diagnosis or advice.

WSU Whatcom County Extension website has extensive information about their programs, related links and lists of the gardening workshops.

<http://whatcom.wsu.edu>

360.676.6736

1000 N Forest Street, Suite 201, Bellingham WA 98225

Office Hours M-F 8:30 a.m. to 4:30 p.m.

Gardening Information Websites

- **Gardening in Western Washington**
<http://gardening.wsu.edu/>
<http://cru.cahe.wsu.edu/CEPublications/EM057E/EM057E.pdf>
- **Frost dates for Washington, Oregon, and Alaska**
www.humeseeds.com/frost1.htm#WA
- **How to make a cloche**
<http://westsidegardener.com/howto/cloche.html>
- **Integrated Pest Management and Disease**
<http://gardening.wsu.edu/pest-management/>
- **Composting Publications: WSU Whatcom County Extension**
<http://whatcom.wsu.edu/ch/homecomposting.html>
<http://whatcom.wsu.edu/ch/compostsoilamendment.html>
- **Gardening Answers Knowledge Base: University of Washington Botanical Gardens**
www.depts.washington.edu/hortlib/resources/resource_search.php?term=540
- **Common diseases in the home garden**
<http://hortsense.cahnrs.wsu.edu/>

Gardening Resources: Books

Garden Layout/Planning

- *Cubed Foot Gardening: Growing Vegetables in Raised, Intensive Beds* by Christopher O. Bird
- *Gaia's Garden: a Guide to Home-Scale Permaculture* by Toby Hemenway
- *Lasagna Gardening* by Patricia Lanza
- *Square Foot Gardening* by Mel Bartholemew
- *The Maritime Northwest Garden Guide: Planning Calendar for Year-Round Organic Gardening* by Seattle Tilth
- *The New Self-Sufficient Gardener* by John Seymour

Growing Vegetables

- *Growing Vegetables West of the Cascades: The Complete Guide to Natural Gardening* by Steve Solomon
- *How to Grow More Vegetables and Fruits, Nuts, Berries, Grains, and Other Crops than You Ever Thought Possible on Less Land than You Can Imagine* by John Jeavons
- *The Sustainable Vegetable Garden: A Backyard Guide to Healthy Soil and Higher Yields* by John Jeavons and Carol Cox
- *100 Heirloom Tomatoes for the American Garden* by Dr. Carolyn J. Male
- *Taylor's Guide to Vegetables and Herbs* by Norman Taylor et al
- *Rodale's All-New Encyclopedia of Organic Gardening* by Marshall Bradley, Barbara W. Ellis (Editor)
- *Food Grown Right in Your Backyard* by Colin McCrate and Brad Halm
- *200 Tips for Growing Vegetables in the Pacific Northwest* by Maggie Stuckey
- *The Big Book of Herbs* by Tom DeBaggio and Dr. Arthur Tucker

Composting

- *Let It Rot: The Gardeners' Guide to Compost* by Stu Campbell
- *Worms Eat my Garbage* by Mary Appelhof
- *Compost This Book* by Tom Christopher and March Asher
- *The Secret Life of Compost* by Malcolm Beck
- *Compost* by Ken Thompson

Soil Health

- *Secrets to Great Soil Health* by Elizabeth Stell
- *Start with the Soil* by Grace Gershun
- *Teaming with Microbes: A Gardener's Guide to the Soil Food Web* by Jeff Lowenfels and Wayne Lewis

Container Gardening

- *The Bountiful Container: Create Container Gardens of Vegetables, Fruits, and Edible Flowers* by Rose Marie Nichols McGee, Maggie Stuckey
- *The Edible Container Garden: Growing Fresh Food in Small Spaces* by Michael Guerra
- *Kitchen Gardens in Containers* by Anthony Atha
- *The Postage Stamp Garden Book: Grow Tons of Vegetables in Small Spaces* by Duane and Karen Newcomb

Winter Gardening

- *Winter Gardening in the Maritime Northwest* by Binda Colebrook
- *Four Season Harvest: Organic Vegetables from Your Home Garden All Year Long* by Elliot Coleman

Seed Saving

- *Growing Seeds! Starting from Scratch* by Linda d. Harris
- *Seed to Seed: Seed Saving and Techniques for Vegetable Gardeners* by Suzanne Ashwort

Gardening Books for Kids

- *Dig, Pland, Grow: A Kid's Guide to Gardening* by Felder Rushing
- *My Backyard Garden* by Carol Lerner
- *Composting: Nature's Recyclers* by Robin Koontz
- *A Diary of a Worm* by Doreen Cronin
- *How Groundhog's Garden Grew* by Lynne Cherry
- *Tops and Bottoms* by Janet Stevens

Local Garden Suppliers who are Garden Project Supporters:

- **Builders Alliance**

building supplies and tools

www.buildersalliance.com

360.738.9000

3801 Hannegan Road, Bellingham.

- **Hardware Sales**

tools, hardware

www.hardware-sales.net

360.734.6140

2034 James Street, Bellingham

- **Sunseed Farm**

organic plant starts

www.sunseedfarm.com

Retail Sales at the Bellingham Farmers Market and at other outlets in Bellingham.

- **Uprising Seeds**

organic vegetable and flower seeds

www.uprisingorganics.com

360.778.3749

Online sales and mail order catalog available.

Garden Map for a 4' 8' bed. Each square represents a square foot.

"A garden is a grand teacher. It teaches patience & careful watchfulness; it teaches industry & thrift; above all it teaches entire trust." -Gertrude Jekyll

