

Growing Groceries



Early Spring Vegetables

Peas, Hardy Greens, Carrots, Radishes, and More

ANNE NEILSON

March 29, 2023



WASHINGTON STATE UNIVERSITY
EXTENSION



Master Gardeners Foundation
of Puget Sound

Master Gardeners are all volunteers,
and while we have acquired basic Zoom skills,
sometimes unforeseen technical issues arise.

Please bear with us, be patient and
understanding if any technical glitches pop-
up during tonight's presentation.



The information contained in Growing Groceries
presentations is based on Washington State University
home gardening publications and other science and
research-based materials. Resource lists are provided at
the end of the presentations.

To enliven the learning experience, speakers may use
examples from their own garden experience and draw
from their personal gardening successes and failures.



Welcome!

About this evening's class:

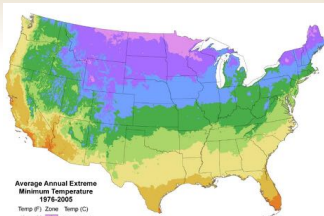
- 90 minute class
- Designated question times
- Questions can be put in chat

Anne Neilson

A Master Gardener since 2020 and lifelong vegetable grower, Anne is a member of the Snoqualmie Valley and email Clinics and volunteers in the Bellevue Demonstration Garden. She chairs and manages a vegetable garden at her church to supply a local food bank. She also works as an Occupational Therapist at a skilled nursing facility.



We Are in Zones 7- 8, Most 8b



Average Annual Extreme
Minimum Temperature
1976-2005

Temp (°F)	Zone	Temp (°C)
-40 to -30	1	-40 to -34.4
-30 to -20	2	-34.4 to -28.9
-20 to -10	3	-28.9 to -23.3
-10 to 0	4	-23.3 to -17.8
0 to 10	5	-17.8 to -12.2
10 to 20	6	-12.2 to -6.7
20 to 30	7	-6.7 to -1.1
30 to 40	8	-1.1 to 4.4
40 to 50	9	4.4 to 10

- Hardy plants survive 15-20° weather.
- Check with seed company where you purchase your seeds (or the map on the back of seed packets) to confirm zone.
- Isolated coastal and foothill pockets
- Enter zip code for your hardiness zone:

<https://planthardiness.ars.usda.gov>

My House is in Planting Zone 8b

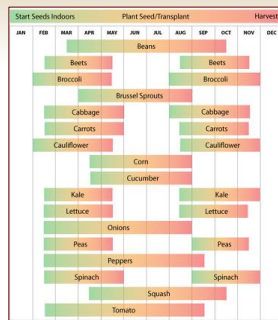
(Maritime Climate; frost dates differ by microclimate)

Last Frost Date
15th April - 20th May

Growing Season

First Frost Date
15th Oct - 30 Oct

Planting Chart



Phenology

The use of indicators from nature and other plants to know when it is time to plant.

- Snow melt on mountains
- Return of migrating birds
- Blooms or leaf buds on plants
 - Plant peas, lettuce when forsythia bloom and Rufus Hummingbirds return
 - Plant carrots, radishes, spinach when the dandelions and crocus start to bloom, and lilac leaves appear.

The Back of a Seed Packet

- What to read
- What is important to note and to know
- Germination times
- Days until harvest



Hybrid Seeds

- Species or varieties are crossed by human intervention to breed desired traits. Also called F1 seeds.
- Any seed produced by F1 plants is genetically unstable and cannot be saved for use in following years. Not only will the plants not be true-to-type, but they will be considerably less vigorous.
- Gardeners who use hybrid plant varieties must purchase new seed every year.

Open Pollination

- Open-pollination is when pollination occurs by insect, bird, wind, humans, or other natural mechanisms.
- Because there are no restrictions on the flow of pollen between individuals, open-pollinated plants are more genetically diverse.



Early Preparation



Photo Credit: Tith Learning Garden



Photo by Anne Neilson

Start Some Varieties Indoors & Prepare Outdoor Beds

Indoors:

- Heated mats not necessarily needed for crops that can tolerate coolness
- Grow lamps

Outdoors:

- Cover with burlap or sheet of plastic to dry and warm soil
- Direct sow under row cover
- Control slugs
- Protection from "shared habitat"

Crop or Floating Row Covers



Photo courtesy of kitchengardens.com



Photo by Anne Neilson

- Gently place on transplants or over seeded rows.
- Leave slack to allow for growth expansion.
- Protects from frost and gives earlier yields.
- Work as an insect screen.
- Allows air and water to freely pass.
- Some brand names are Reemay, Agribon.
- Heavier weights protect from frost but limit light transition to 75%. Protect to 30 degrees.
- Ones sold as frost blankets limit light to 50%, but protect to 26 degrees.
- Lightweight ones are sometimes sold as summer insect barriers. They protect plants from insects and allow for over 90% light to pass through.
- Many different sizes to suit your needs.
- Reusable. Last about three years.

Growing Peas

PISUM SATIVUM



Peas

Peas are part of the Fabaceae or Leguminosae family. This also includes beans, lentils and peanuts.

- Cool weather crop
- Quick and easy to grow
- Early spring planting
- Many varieties to choose from
- Delicious and nutritious
- Peas please



Pea Diseases

Pea Enation Mosaic Virus, Pea Seedborne Mosaic Virus, and Pea Streak Viruses Are the Enemies!

- Unavoidable regional pea diseases.
- Caused by hot and sunny weather.
- Virus spread by aphids and weevils make it worse.
- Pods look mottled, warty, flowering and pod setting stops and vines die.
- Brown spots with leaf curl
- Brown to purple spotting, streaking and fast death
- Planting before March 31 helps avoid aphids.



Image from Pacific Northwest Plant Management

Choosing Your Peas

Plant Types

- Bush- Free Standing
- Vine or Pole- Need Support
- Determinate yield for a short time, then quit
- Indeterminate keep producing for a longer time

Varieties

- Time to harvest varies from 50 to 80 days, shorter is better
- Pick Varieties resistance to pea diseases, especially enation viruses

Good quality seed



Types of Peas

- Shelling peas
- Used for cooking, pea soup
- Remove peas from inedible pod
- Freeze, dry or can
- Alaska Early, Maestro produce in 60 days
- Prospector, Corvallis, Citatin, Aspen, Trident, Knight, Mohawk are some enation resistant varieties



Types of Peas (continued)



Snow peas

- Flat, edible pods not shelled
- Oregon Sugar Pod 11 enation resistant
- Most are short duration

Sugar snap

- Cross between shelling and snow peas
- Typically, not shelled
- Oregon Sugar Pod, Cascadia, Green Sugar are enation resistant

Peas – Where to Plant?

Well-drained and fertile soil

- Soil testing? pH 6-7.5
- Raised beds? Containers?

Full-sun - 6-12 hours daily

Space - Many size choice

Rotation - once every 3 years



Peas – When to Plant

Cool weather crop, check your soil:

- Soil temperature 50 degrees or 4-6 weeks before last spring frost
- Soil dry enough to pass the “fist” test or not stick to garden tools
- Forsythia blooms or Rufus Hummingbirds return



Sowing Pea Seeds

Directly sow

- Soak 12-24 hours before planting

If starting indoors,

- start 10 days to 2 weeks prior to transplanting in garden but wait until after threat of last killing spring frost



Sowing Pea Seeds (continued)

Bush peas

- Sow 1" deep; 2" apart
- Rows 18-24" apart

Vining peas

- Sow 6 to 8 seeds around base of circular or teepee trellis
- Sow 1" deep, 1" apart for straight line trellis
- Rows 3 feet apart

Germination: 5-10 days.



[This Photo](#) by Unknown Author is licensed under [CC BY-NC](#)

Pea Inoculant

- Nitrogen fixation!
- Pea inoculant (Rhizobia bacteria mixture)



Peas After They are Planted

Watch carefully during first few weeks!

Low soil fertility

- Bone meal
- Avoid high nitrogen fertilizer

Flower bloom

- Self-pollinating
- Need bees and other insects



Growing Peas

Ongoing care

- Water regularly – 1" per week
- Weed carefully - shallow rooted
- Mulch after plants established
- Do well with deep-rooted and other cool-season plans



Harvesting Peas

Harvest

- Frequent picking essential for optimum quality and continued production

After harvest

- Remove debris if diseased
- Turn over healthy material under soil in fall or compost it
- Leave roots in soil



Peas – Pests and Diseases

Reduce diseases by....

- Plant good quality, short season, disease-free seed
- Plant in well-drained soil
- Avoid overhead watering
- Avoid plant overcrowding
- Clean up plant debris; remove diseased or dying plants



Pea Diseases

Common diseases:

- Powdery mildew
- Root rot
- Seed rot/damping off
- Viruses



Pea Pests

Pests

- Few and rarely affect!!!
- Prevention
 - Crop rotation
 - Avoid stress

Common

- Pea leaf weevil
- Slugs
- Cut worms
- Aphids



Image by Eugene E. Nelson, Bugwood.org

Pea Questions?



Growing Lettuce

LACTUCA SATIVA



Growing Lettuce (*Lactuca Sativa*)

Lettuce is a member of the Asteraceae (ass-ter-AY-see-eye) (Compositae) family which includes:

- Chicory/Endive
- Jerusalem & Globe Artichoke
- Tarragon, Artemisia
- Marigolds, Chamomile, and Chrysanthemums
- Daisy



Grow What You Like!

- Many types and varieties
- Want perfectly straight rows of lettuce? Consider seed tape (Territorial Seeds)
- Pelleted Seeds are coated with clay to make planting easier.
- Bolting is the enemy! Use slow to bolt varieties.



This is a lettuce bed at the Bellevue Demo Garden!

Loose-leaf Lettuce

- Continuous leaf growing rosettes of many colors.
- Some slow to bolt varieties are Red Sails, Green Deer Tongue, New Red Fire, Simpson Elite, Green Star, Salad Bow, Cherokee.



Romaine Lettuce



- Upright, cylindrical shape of tall growing leaves
- Well known for use in Caesar Salads
- Matures in 50 -80 days
- Valmaine and Parris Island are slow to bolt
- Direct seed or transplants

Butterhead Lettuce

- Delicious and buttery
- Small loose heads
- Some slow to bolt varieties are: Buttercrunch, Optima, Tom Thumb
- Skyphos has good disease resistance



Crisp Head Lettuce

- Sweet and crunchy; larger tight heads
- I have had the best luck with Great Lakes, Superior 1



Lettuce Preparation



- Spring, late summer (fall crop)
- Well drained, moist, fertile soil
- Dig in compost or well-rotted manure, 1-2"
- Raised beds help
- Work with fork-avoid compaction
- Lettuce can withstand some shade

Sowing Lettuce

- Temperatures between 45-65 degrees
- Forsythia blooms or Rufus Hummingbirds return
- If direct, sow thick in rows 12-14 inches apart
- Cover seed with 1/8 to 1/4 inch soil/media max!
- Add slug prevention
- Row covers help in early spring
- Up in 4 to 10 days
- Thin (and eat) to 6-12 inches apart, depending on variety

Spacing

For Mature Plants



For Baby Greens



Growing Lettuce

- Ensure at least 1 inch of water per week; keep moist, not soggy
- Weed to eliminate competition
- Mulch with straw
- Row cover in cold temps to extend harvest
- Easy to seed/plant/harvest multiple crops in one bed
- Interplant with large crops as crop fills in (tomatoes, corn, etc.)

Lettuce Problems and Solutions

Pests

Slugs and snails!

- Iron phosphate bait
- Handpicking
- Ducks
- Wooden boards with bait underneath

Cute little mammals

Birds

Disease

Downy mildew and white mold

- Soil borne
- Rotate crops each season
- Drip irrigation = no wet leaves

Bellevue Demo Garden's Lettuce Beds



Lettuce Questions?



Growing Carrots

DAUCUS CAROTA



Carrots

Apiaceae: A family of crops that attract pollinators because of their broad carpet of tiny flowers on which bees and flies can walk.

Why grow them?

- High levels of several carotenoids, giving carrots their color and what makes them healthy for humans
- Vitamin A, bioactive phytonutrients, low glycemic load



Also...

- A great late season crop that tolerates frost.
- 2-4 months to harvest.
- Store in dry and airtight containers in fridge or you can leave them in the ground until the ground freezes.
- Perfect wash-and-go snack that kids (and dogs) will eat (but probably not cats).



Types of Carrots for Loose, Sandy Soil

Imperator

Supermarket type—needs deep, loose, sandy soil, less sweet, fibrous



Nantes

High sugar content, best for early sowing and eating. Low fiber so tender but split easily. Do not over winter.



Danver

6-7", Loose, sandy soils, High fiber content, can over winter, use for juice



Photos from fertilitymorse.com

Types of Carrots For Heavier Clay Soils

Chantenay

Best for clay soil and store well. Thick and conical.



Image by MagicBones

Globe or Oxheart

Round, short season, do not store well.



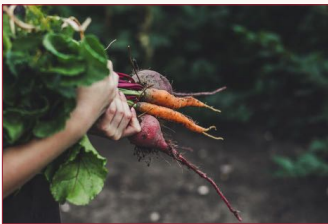
Image by Marde Ross & Company

Sowing Carrot Seeds



- Soil Temperature above 50 degrees F
- When the dandelions and crocus start to bloom.
- Keep moist in the germination process
- Sowing in rows is easy for weeding, but you can scatter or broadcasts seeds.
- If soil crusts on the top layer, that can hamper germination; try fine sand, potting soil, Coconut Coir or fine compost to cover seeds

Growing Carrots



- Water deeply and frequently to avoid cracking, woodiness, and bitter flavor.
- Thin seedlings, as the carrots need room to expand/grow.
- Pull when thinning. The odor from snapped leaves can attract carrot fly!
- Weed regularly; that's where the pests are hiding.

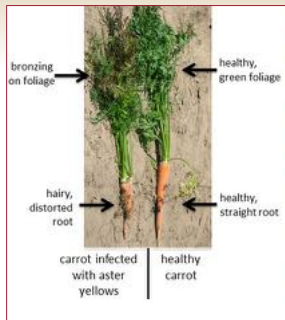
Carrot Pests



Carrot rust fly:

- Wide range of weed hosts, so control weeds
- Don't overwinter/store in the ground
- Also attacks parsnips, celeriac, and celery
- Floating row cover is your best friend

Carrots pests (continued)



Leaf spot:

- Rotate crops, don't plant carrots in the same place.

Root knot nematodes:

- Rotate with crops not susceptible.

Aster yellows:

- Caused by bacteria-like phytoplasma organism spread by sucking insects such as leafhoppers.

Other Problems with Carrots



Sunburn or "Green shoulders"

- Mulch carrots to cover shoulders but not growing point

Forking

- Occurs in rocky or clumpy soil
- Try raised beds
- Cultivate the soil BUT avoid damage by hoeing/cultivating too close



Other Problems with Carrots (continued)



Cracking

- Caused by uneven watering; some cultivars are more prone than others

Powdery mildew

- Nantes and Imperator cultivars are more susceptible

Carrot Questions?



Growing Radishes

RAPHANUS RAPHANISTRUM



Radishes

- An edible root vegetable of the family Brassicaceae.
- Many varieties, sizes, flavors, and colors.
- Quick germination, rapid growth, though larger varieties can take months!
- Great edible plants for novice and seasoned gardeners alike.
- Spring, summer and fall varieties.



Radish Varieties

Spring Varieties

- Small-bulbed, rapid growth
- Varieties- Champion, Pink Beauty, Easter Egg, Celesta, Crunchy- Crimson, Cherry Bell



Photos from Territorial Seeds

Daikon

- Large roots, take longer to grow
- More susceptible to flea beetles.
- Most are summer and fall Radishes.
- Variety- Sweet Baby



Sowing Radish Seeds

- For the **spring**, sow directly 4-6 weeks before frost.
- When the dandelions and crocus start to bloom, and lilac leaves appear.
- Space $\frac{1}{2}$ to 1 inch deep and 1 to two inches apart in rows 12 inches apart.
- Can plant every 10 days for continuous harvest in the late spring and early summer.
- Plant a **fall** planting! Sow seeds 4-6 weeks before the first fall frost.



Growing Radishes

- Thin radishes to about 2 inches apart when the plants are a week old. Crowded plants do not grow well.
- Consistent, even moisture is key. Keep soil evenly moist but not waterlogged. A drip irrigation system is a great way to achieve this.
- Putting a thin layer of mulch around the radishes can help retain moisture in dry conditions.



Harvesting Radishes



Andrew Spencer/Ball Horticultural Company

- Some varieties are ready to harvest as soon as three weeks after planting (check seed packet).
- Usually, when roots are approximately 1 inch in diameter at the soil surface, it's harvest time. Pull one out and test it before harvesting the rest!
- They will deteriorate quickly and will be tough and "woody" if you wait too long to harvest.

Radish Pests

Flea beetles

Symptoms: Small, round holes in leaves.

Cabbage maggot

Symptoms: Plants wilted, leaves yellow and/or stunted soon after germination.

Brown, mushy tunnels in roots

Small white maggots (at harvest time).

Corrective Action

Use row covers at planting.

Rotate to different part of garden at next seeding.

Reduce weeds, especially mustard family.

Use short duration varieties.

Add parasitic nematodes to soil around seedlings.

<http://pep.wsu.edu/hortsense>

<http://pnwhandbooks.org>



Pictures by Ken Gray Insect Image Collection

Radish Questions?



Growing Spinach

SPINACIA OLERACEA



Types of Spinach

Flat Leaf



Photo Credit: grow-it-organically.com

- Most popular in US
- Smooth, spade shaped leaves
- Tender texture, and slightly sweet flavor
- Best eaten raw (salads)
- Cooler weather

Savoy



Photo Credit: westcoastseeds.com

- "Curly leaf" spinach
- Dark green, crinkly, curly leaves
- Crisp texture and slightly bitter flavor
- Best used for cooking (vs. raw)
- Warmer weather



Semi-savoy



Photo Credits: grow-it-organically.com

- Semi-crinkly leaves
- Same crisp texture as savoy spinach

Recommended Slow to Bolt Varieties of Spinach

Type	Varieties
 Photo Credit: grow-it-organically.com Flat Leaf	Winter Giant, Space F1, Matador, Melody, Tyee F1, Olympia F1, Red Tabby
 Photo Credit: westcoastseeds.com Savoy	Bloomsdale Savoy, Regiment

Spinach Varieties



Photo Credit: UprisingOrganics.com

- Buy ones designed for your growing zone
- Use disease resistant varieties:
 - Bloomsdale*
 - Olympia*
 - Space*
 - Tyee*
 - Winter Giant*
 - Palco*
 - Red Tabby*
 - Patton
 - Tundra

Sowing Spinach



Photo Credits: goodfood.com.au

- Soil temperatures 45°F-75°F
- When the dandelions and crocus start to bloom.
- Germinates faster in cool vs hot soil.
- Germination days 3- 7 days
- Direct sow under cover
- Resist thinning until seedlings have true leaves

Growing Spinach

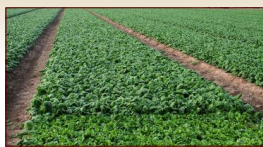


Photo Credit: today agrilife.org

Maintenance:

- Thin 2" - 4" apart
- Soil should be evenly moist
- Keep beds weed free to eliminate competition for resources



Photo Credits: raised-bed-gardening.com

Harvesting:

- Follow instructions on seed packet for days to maturity (30-40 days)
- Spinach leaves can be harvested when 5 to 6 leaves are on the plant

Growing Spinach (continued)



- Succession planting every three weeks (until temperatures reach 75°F)
- Bolt resistant varieties can be planted in April
- Restart planting late summer for fall crop – 8 weeks before first frost
- Use shade cloth if it gets too hot to prevent bolting

Spinach Common Problem



Photo Credit: garden.eco

Bolting (the enemy)

- Caused by heat
- Plant seeds by early spring (for early crop) or in late summer for fall or winter crop
- Use slow to bolt varieties

Spinach Common Diseases

Damping Off



Photo Credit: wsu.edu

- Use quality seeds
- Prevent overwatering
- Plant in well-drained soils during dry weather

Downy Mildew



Photo Credit: wsu.edu

- Space plant at recommended distance to allow air circulation
- Water soil to keep plant dry
- Remove infected plant
- Rotate crops

Spinach Common Pests

Aphids



Photo Credit: wintergreensalad.blogspot.com

Use strong stream of water,
Encourage natural enemies including ladybird beetles

Slugs and Snails



Photo Credit: thegardenerseden.com

Use baits and traps

Leafminers



Photo Credits: ag.umass.edu

Cut infected leaves, check for eggs
Screen plants with a floating row cover prior to emergence of flies in spring

Spinach Questions?



Resources

For zones

- Home Vegetable Gardening in Washington, #EM057E shows the USDA plant hardiness zone map with our area as zone 8a (minimum temp 10-15°F), with some variations depending on elevation and microclimate.
- <https://www.plantmaps.com/interactive-washington-usda-plant-zone-hardiness-map.php>
- <https://planthardiness.ars.usda.gov>

For frost dates

- <https://www.plantmaps.com/interactive-washington-last-frost-date-map.php>

For WSU Phenology

- <https://wp.wsu.edu/uploads/sites/2073/2014/03/010413.pdf>

Resources, cont.

For Diseases and Pests

- <https://hortsense.cahnrs.wsu.edu/Search/SearchByPlantCategory.aspx>
- <https://pnwhandbooks.org>

For Soil Testing

- <https://kingcd.org/programs/better-soils/healthy-soil/>

Info on Growing Specific Vegetables

- <https://extension.wsu.edu/snohomish/chenopods/>
- <https://extension.wsu.edu/snohomish/asteraceae/>
- <https://s3.wp.wsu.edu/uploads/sites/2071/2014/04/Green-Peas-FS116E.pdf>
- <https://pubs.extension.wsu.edu/growing-carrots-in-the-home-garden-home-garden-series>
- <https://s3.wp.wsu.edu/uploads/sites/2073/2014/09/Home-Vegetable-Gardening-in-Washington.pdf>

"Ask a Master Gardener"

Send a messages with questions and photos to ask-a-mastergardener@live.com

Or, use the form you'll find online at <https://extension.wsu.edu/king/ask-a-master-gardener/>

Become a Master Gardener

For information on King County Master Gardener training, visit <https://extension.wsu.edu/king/gardening/become-a-master-gardener/>

Applications for the 2024 class will open in September 2023.

The training course is generally held on 10 weekends beginning in January using

- A blended learning model of Zoom lectures,
- in-person sessions, and
- a self-paced online horticulture course.

Get Involved with Growing Groceries

Interested Master Gardeners are invited to join the Growing Groceries leadership team or to volunteer as a presenter in 2024.

Please contact Growinggroceries.king@gmail.com



2023 Class schedule

More Info: <https://mgfkc.org/education/growinggroceries>

Date	Class
Wed, January 18	Global Vegetables in a Diasporic Garden
Wed, February 1	Backyard Fruit Trees
Wed, February 15	Principles of Gardening in the Pacific Northwest for the Intermediate Gardener
Wed, March 1	Soil Quality and Fertility for the Home Gardener
Wed, March 15	Starting your Garden from Seeds
Weds, March 29	Early Spring Vegetables: Peas, Hardy Greens, Carrots and More
Wed, April 5	Brassicas: Kale, Cabbage, Collards, Mustard, and More
Wed, April 19	Tomato Family: Tomatoes and Peppers
Wed, May 3	Perennial Vegetables and Hardy Herbs
Wed, May 17	Beans and Summer and Winter Squash
Wed, May 31	Container Vegetable Gardening
Wed, June 14	Integrated Pest Management

Support for Growing Groceries



WASHINGTON STATE UNIVERSITY
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King County Master Gardener Program

<https://extension.wsu.edu/king/gardening>

- Demonstration Gardens
- Plant Clinics
- Education Outreach
- Science-based Publications



Master Gardener Foundation
of King County

Master Gardener Foundation of King County

<http://www.mgfkc.org>

- Fundraising for these programs





Gardener Education
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