

# Growing Groceries



## Principles of Gardening in the Pacific Northwest

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January 19, 2022



Master Gardener Program

WASHINGTON STATE UNIVERSITY  
EXTENSION



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## A Note About Our Class Tonight

**We 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.**



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## Resources

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 on the King County Growing Groceries website and at the end of some presentations.

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

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## Reasons to Start a Veggie Garden

- You have the space
- You have the time
- You love fresh produce
- You love variety
- You want to practice sustainability/organic gardening
- You love delicious things



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## Delicious Things!



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## Understand Our PNW Climate

- We are in Zone 7-8 ~ ( average low of 10-20° F).
- 2 short growing seasons for cool crops (greens, brassicas, radishes, carrots). Be aware of microclimates.
- Short growing season for hot crops (cucumbers, peppers, eggplant, melons, and tomatoes).
- Has a wide variety of soils with a low pH
- Typically dry from June to September.

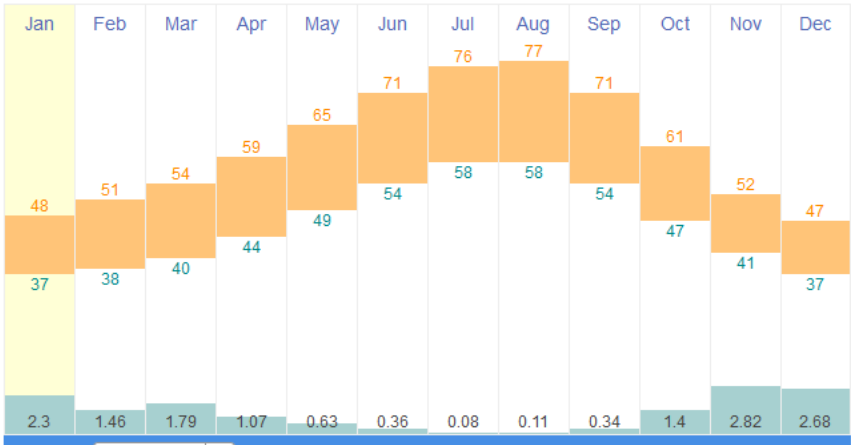
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## Seattle Weather

### Annual Weather Averages Near Seattle

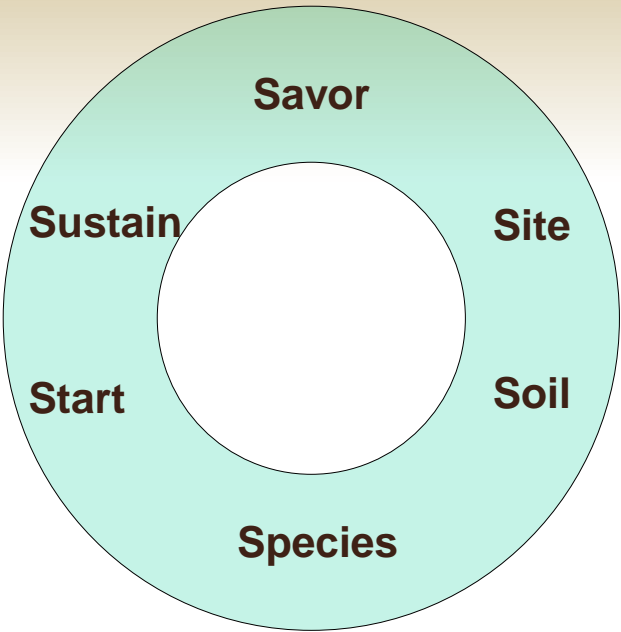
Averages are for Seattle Boeing Field, which is 7 miles from Seattle.

Based on weather reports collected during 1985–2015.



<https://www.timeanddate.com/weather/usa/seattle/climate>

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## Recipe for a veggie harvest - served with lots of **prevention**, and a side of cure

1. Site – full sun
2. Soil – well draining and fertile
3. Species – disease resistant and will ripen in time
4. Start – at right time/temp
5. Sustain – water and watch
6. Savor – know what ripe is



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## Recommended Tools

- Use a Gardening Calendar (free)
  - Vary from detailed to concise
  - <http://www.metromastergardeners.org/calendar/>
  - Some include all plants, some are veggie specific
  - Get one for your climate zone
- Get a soil test (free)
  - add the deficient items
- Use a moisture meter (about \$10)
- Soil thermometer (about \$15)

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## Your Site

- Size - a one-gallon container to an acre.....or more
- Sun – full sun is 6 or more hours per day
  - Low light? Start by growing leafy greens, asparagus, garlic, and leeks.
  - Medium light? Try beans, radishes, and peas.
- Access to water
- Good drainage
- Defensible



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## Site - Garden Layout

- Build your raised beds or rows north to south to allow for the best sun.
- Beds should be 3-4 feet wide, make sure you can reach the middle of the bed.
- Paths should be wide enough to walk through comfortably.

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## Site - Ground Options



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## Site - Benefits of Raised Beds

- Elevated soils warm up faster for earlier planting
- Improved drainage allows bed to dry out faster in the spring so soil is workable earlier
- Soil and nutrients are contained thereby reducing run-off into waterways
- Promotes efficient use of garden space for desired plants – less room for weeds

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## Site - Container Options



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## Site - Container Info

- The bigger the pot the better
  - Less watering, more growing
- Ditto on raised bed benefits

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## Site - Go Vertical



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## Gardeners Soil Recipe - Ideal Blend

- Minerals – clay, silt and sand
- Organic matter – composted, decaying and living
- Pores – allow water movement and air pockets
  
- Add nutrients, if needed
  - **N** = Nitrogen
  - **P** = Phosphorus
  - **K** = Potassium

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## Soil - Fertilizer/Compost Additions

### Best choice -

- Have a soil test completed.
  - Follow amendment directions in the report.

### Other choices -

- Apply 6-7 pounds of a 5-5-5 complete organic fertilizer per 1000 sq. foot of garden.
- Apply per plant or plant row (Territorial Seed)
- Add 1 to 3" compost to new beds, less for existing beds.

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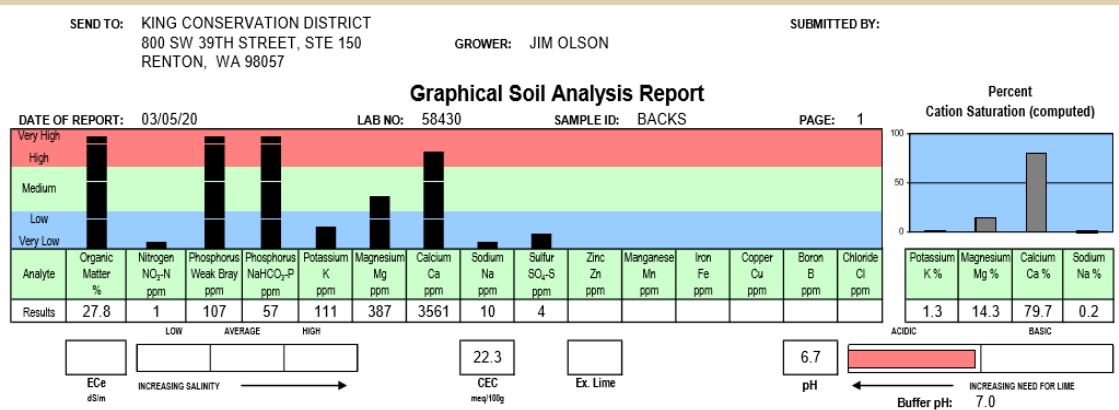
## Soil - Preparing the Soil

Get **FREE** soil test-King Conservation District.



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

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### Soil Fertility Guidelines

CROP: GARDEN RATE: lb/1000 sq ft

Dolomite (100 score)	Lime (100 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P <sub>2</sub> O <sub>5</sub>	Potash K <sub>2</sub> O	Magnesium Mg	Sulfur SO <sub>4</sub> -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
				1.1		4.5		0.6					

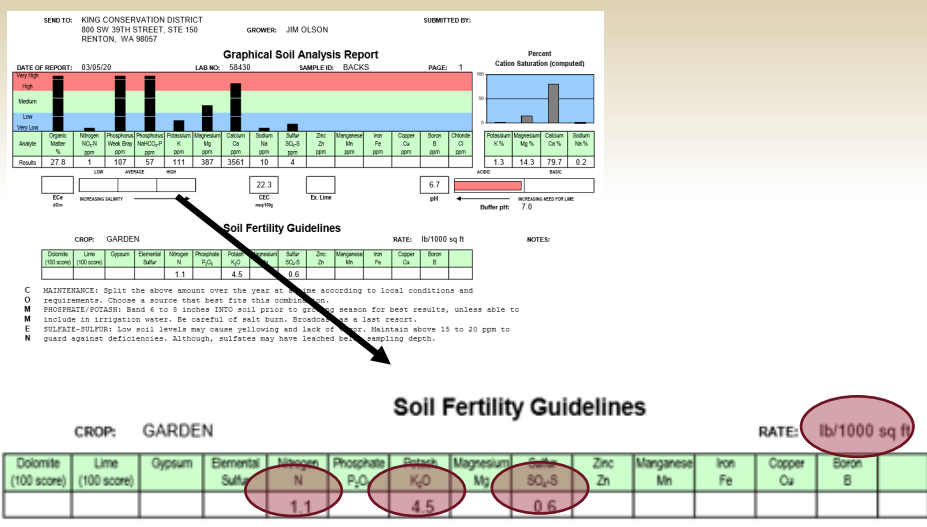
NOTES:

**C** MAINTENANCE: Split the above amount over the year at a time according to local conditions and requirements. Choose a source that best fits this combination.

**O** PHOSPHATE/POTASH: Band 6 to 8 inches INTO soil prior to growing season for best results, unless able to include in irrigation water. Be careful of salt burn. Broadcast as a last resort.

**E** SULFATE-SULFUR: Low soil levels may cause yellowing and lack of vigor. Maintain above 15 to 20 ppm to guard against deficiencies. Although, sulfates may have leached below sampling depth.

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Source: FS324E – WSU GARDEN FERTILIZER CALCULATOR Home Garden Series  
Link: <https://pubs.extension.wsu.edu/home-garden-and-lawn-fertilizer-calculator-home-garden-series>

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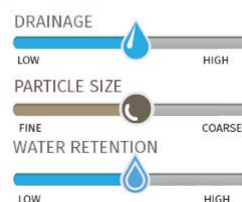
## Soil - Potting Soil

- Not soil at all.
- Sterile – free of insects, weed seeds and disease organisms
- Designed for lighter weight, good drainage, good aeration and nutrient availability.
- Typically composed of compost, peat moss, vermiculite, bark and coir fiber (ground coconut hulls)
- They do break down in a couple years....

### Ingredients:



### Characteristics:



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## Soil - For Boxes and Pots

Add good garden soil from your garden or make/buy the best soil you can



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## Soil - To Till or Not to Till

If you soil has been compacted (walked on, driven over), you will need to break it up.



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## Species - Plant Info/Label

**Marketmore**

**Slicing Cucumber**

Very popular slicing and salad variety. Harvest about 60 days after transplanting.

**Slicing Cucumber**

Dark green fruit, 8-9" long on vigorous growing plant. Sturdy skin holds up well in packing and transport.

**Maturity:** Harvest about 60 days after transplanting.

**Exposure:** Full Sun

**Soil:** Plant in warm, fertile, light, well-drained soil. Feed with half a cup of organic fertilizer per plant.

**Water Needs:** Maintain even soil moisture.

**Spacing:** Plant in hills 48" apart. Train to a trellis to save space.

7 23787 93386 5 3.5

Savor

Savor

Sun/site

Soil/site/start

Sustain

Start/sustain

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## Species - Plant Catalog Information

### Edamame Beans

Glycine max

Soil Temp. for Germ.	65-85°F	Days to Emergence	7-10
Seed Depth	1"	Thin Plants To	12-18"
Seed Spacing	4"	Row Spacing	18-36"
Min. Germ.	80%	Seed Life	2-3 years
Seeds per ounce	Listed per variety	Fertilizer Needs	Low

Days to maturity are calculated from date of direct seeding.

**Edamame Bean Culture**  
• Refer to Bean culture on page 9

**Harvest & Storage**  
• Harvesting period is short, check often for mature pods  
• Harvest when pods are plump and beans are almost touching each other in pod  
• Once pods turn yellow, beans become starchy and lose their sweet, nutty flavor

many spices and herbs. Great for falafels. The sturdy bushes stand 4 feet tall, produce 4-5 inch pods, and are reliably hardy to 12°F. Buff colored seeds; 15 per ounce.

**BN049C BROAD WINDSOR**


1 oz	2 oz	1/2 lb	2 1/2 lbs
\$2.35	\$3.30	\$8.75	\$13.15
5 lbs	25 lbs	50 lbs	
\$27.45	\$106.50	\$192.00	

spaces and containers, it produces fat pods with 4-6 delicious beans each. Harvest when the pods start to swell to enjoy the tender, tasty broad beans. Sow seed from spring through summer sequentially for continuous harvest. Green colored seeds; 20 per ounce.


**BN092C ROBIN HOOD**

1 oz	2 oz	1/2 lb
\$3.15	\$4.95	\$10.95

### Edamame Beans



Midori Giant



Sayamusume

**1000 Water Breaker®**  
This micro-fine hose nozzle is the one we use in our greenhouses. It shatters the water flow into an ultra-soft, aerated shower that won't displace seeds and soil or damage delicate plants. With 1,000 holes in the 2 inch head, the water flow is very gentle but with a volume high enough to water quickly and efficiently. Threads onto standard 1/4 inch hose fittings. Handle not included. Made in the USA with a limited lifetime guarantee.  
25U907.....\$21.95

**MIDORI GIANT**  
(OP) 70 days. Extra-early maturing, these delicious edamame are especially suited for shorter season gardens. We found that most of the pods formed 2-3 seeds each, rewarding gardeners with the highest quality, sweet, smooth textured beans. Vigorous plants reach up to 30 inches with a strong, well-branched habit. Buff colored seeds; 80 per ounce.

**BN0625 MIDORI GIANT ORGANIC**

1 oz	2 oz	1/2 lb
\$4.85	\$7.95	\$19.95

**SAYAMUSUME**  
(OP) 85 days. This variety is a consistently high yielder in Washington State University trials. It grows to 2 feet and the 3-3 1/2 inch pods were the largest in our trials. Your taste buds will thank you for this nutritious taste adventure! Yields 2-4 seeds per pod. Light green seeds; 70 per ounce.

**BN0530 SAYAMUSUME**

1 oz	2 oz	1/2 lb
\$4.05	\$6.10	\$16.95

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## Species - Selecting seeds or starts

Choose plants suitable for the Pacific Northwest

- Select for flavor, size, and variety
- Time from planting to harvest
- Chose disease resistant species



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## Species - Seed/Stock Information

- **F1** – hybrid, next generation not true to parent
- **Open Pollinated** – next generation true to parent
- **Organic** – seed stock grown organically, open-pollinated
- **Heirloom** – open pollinated, at least 50 yearly generations



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## Starting

Soil temperature

- Use planting calendar (good)
- Use soil thermometer (better)



	when to plant	days to maturity
Peas	2/15 - 4/15	95 - 120
Spinach	3/1 - 8/15	40 - 50
Peppers	3/15 - 4/15	80+
Tomatoes	4/1 - 5/1	60+
Broccoli	4/1 - 7/15	55 - 90
Carrots	4/1 - 7/15	70 - 90
Lettuce	4/1 - 8/1	65 - 80
Cabbage	4/15 - 6/15	70 - 85
Pumpkins	5/15 - 6/15	90+
Pole beans	5/15 - 6/7	70 - 85
Cucumbers	6/1 - 6/15	55 - 75
Corn	6/1 - 6/15	60 - 100
Melons	6/1 - 6/20	55 - 85

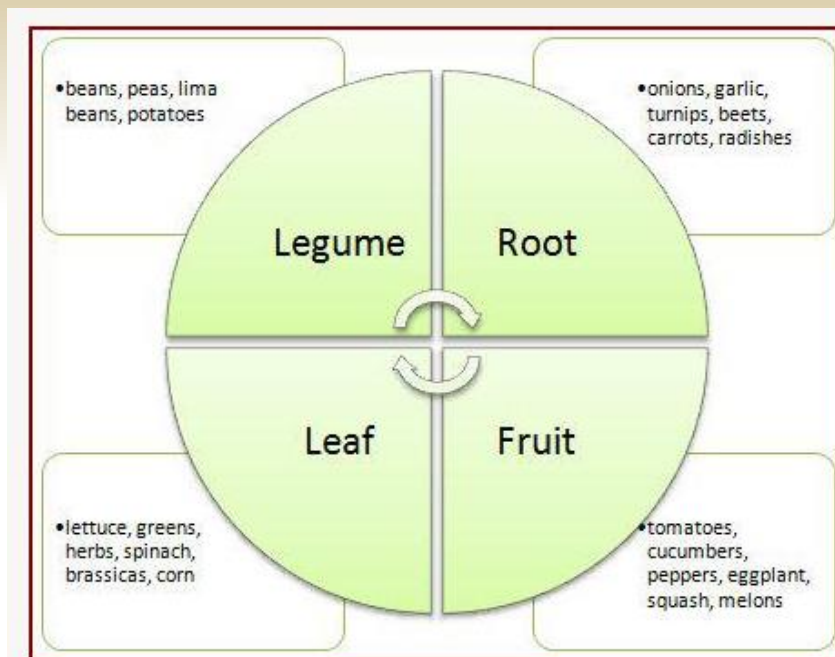
yellow shading = direct sow  
blue shading = beware root bound transplants

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## Start - Key Steps

- Right time and/or temp
  - Raise the heat to extend the season
- Rotate crops
  - Reduce pest, disease, and soil impacts
- Harden off transplants
- Keep seedling plug and soil moisture levels the same
- Protect the seed/seedling from pests
- Optimal spacing and support

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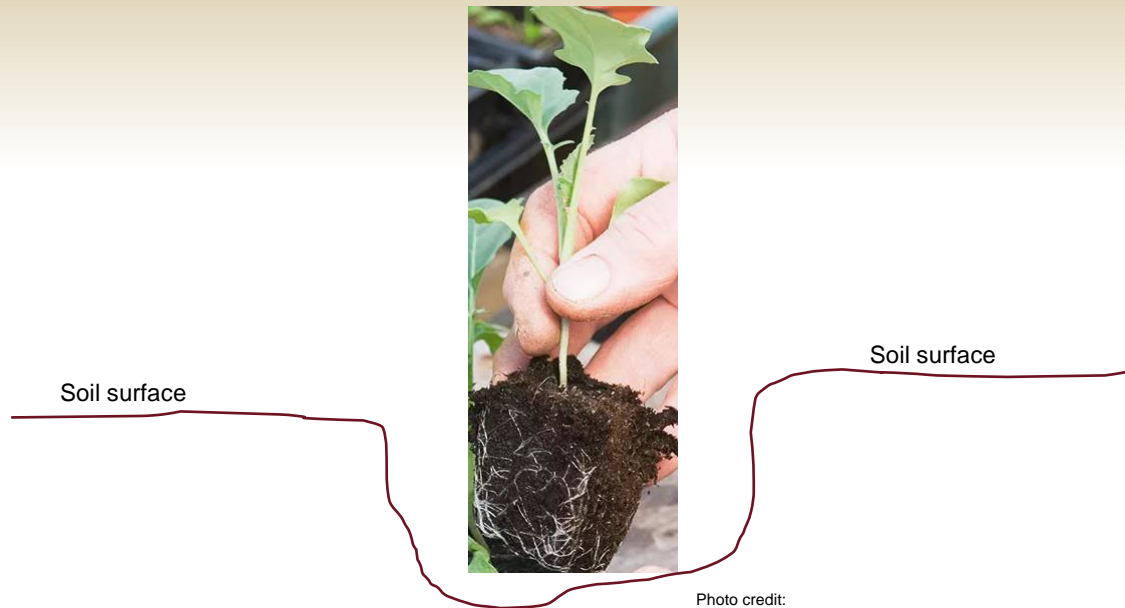


Photo credit:  
<https://www.gardeningetc.com/us/advice/how-to-transplant-seedlings>

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## Sustain - From Survive to Thrive (aka preventing problems)

- Raise the heat
  - Mulches
  - Cloches and beyond
- Watering - an art
- Limit competition
- Encourage optimum pollination

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## Start - Raise the Heat: Raised Beds, Insulating Structures and Floating Row Covers



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## Did you know????

Soils absorb water as slowly as  $\frac{1}{4}$ " per hour (clay soils)

Soils absorb water as quickly as 2 " per hour (sandy soils)

Over watering symptoms - plant parts above ground exhibit: wilting, yellowing, and drying foliage, leaf drop and twig dieback

Under watering symptoms – slowing growth, leaves wilt, lower leaves yellow and curl

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## Sustain - Watering-An Art

- Which holds more water
  - Dry sponge?
  - Wet sponge?
- Drench versus drip
- Too dry? Too wet?
- Know the specific needs of your crops.



**Slow and low is best!!**

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**Table.** Depths to which the roots of mature crops will deplete the available water supply when grown in a deep permeable, well-drained soil under average conditions.

Crop	Depth in feet	Crop	Depth in feet
Alfalfa	4 to 6	Grapes	3 to 5
Almonds	2 to 4	Hops	3 to 5
Apricots	2 to 4.5	Ladino clover and grass mix	2
Artichokes	2 to 3	Lettuce	1 to 2
Asparagus	6	Melons	3 to 4
Beans (dry)	2	Milo	4
Beans (green)	2	Oats	2-3
Beans (lima)	4	Olives	3-4
Beets (sugar)	3 to 5	Onions	1 to 2
Beets (table)	2 to 3	Pasture grasses (annual)	2
Broccoli	2	Pasture grasses (perennial)	2 to 3
Bush berries	3 to 5	Peas	1 to 2
Cabbage	2	Peaches	2 to 4
Cantaloupes	2 to 4	Pears	3 to 4
Carrots	2 to 3	Prunes	3 to 4
Cauliflower	2	Peppers	2 to 3
Celery	2	Potatoes (Irish)	2 to 3
Chard	3	Potatoes (sweet)	2 to 3
Cherries	2.5 to 4	Pumpkins	3 to 4
Citrus	2 to 4	Radishes	1
Corn (sweet)	3	Spinach	1
Corn (field)	2 to 4	Squash (summer)	1 to 2
Cotton	3.5	Strawberries	1 to 2
Cucumber	2	Sudan grass	3 to 4
Eggplant	2	Tomatoes	2 to 4
Figs	2 to 4	Turnips	1.5 to 2.5
Garlic	1 to 2	Walnut	5 to 7
Grain and flax	2 to 3	Watermelons	2 to 3

[https://ucmanagedrought.ucdavis.edu/Agriculture/Irrigation\\_Scheduling/Evapotranspiration\\_Scheduling\\_ET/Frequency\\_of\\_Irrigation/Crop\\_Rooting\\_Depth/](https://ucmanagedrought.ucdavis.edu/Agriculture/Irrigation_Scheduling/Evapotranspiration_Scheduling_ET/Frequency_of_Irrigation/Crop_Rooting_Depth/)

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## Sustain - Pollination

Optimize pollination –  
plant flowers, too!



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## Sustain - Poor Pollination



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## Sustain - Pollination

If using pesticides,  
consider:

- Time of day
- Season
- Flowering cycle



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## Sustain - Limit Competition

Culprits - weeds and other crop plants



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## When Prevention isn't Enough

Don't Just Stand There, Do Something!

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## Integrated Pest Management

### **Set action thresholds.**

When pests threaten your plants or your health.

### **Identify and monitor the critters you have.**

Is it a pest, or a beneficial?

Confirm ID before acting

### **Choose the best control options, least aggressive first.**

Cultural Controls

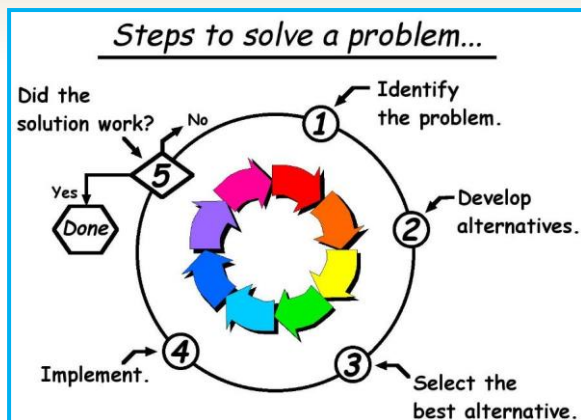
Biological Controls

Non-chemical Controls

Chemical Controls

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## Sustain - How to be a Good Problem Solver



- Observe, then define the problem
- Identify potential solutions
- Implement solutions
- Check results

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

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## Sustain - Observe and Define Problem

- What are the symptoms
  - wilting, leaf discoloration, critter bites?
- Establish context
  - time of year, amount of sun, is the problem getting worse?
  - is this symptom actually a problem?

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## Sustain - Questions to Ask Yourself

- What plant(s) are affected? What plant parts are being affected?
- When did the damage first occur?
- How long has the damage been occurring?
- Ask yourself about your gardening practices such as watering, pruning, etc.

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## Sustain - Identify Potential Causes

- Pest or disease
- Time of year issues
- Gardening practices
  - -watering, competition, etc.
- Site issues
  - -sun exposure, drainage



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## Sustain - Identify Potential Solutions

- Take no action, keep observing
- Change gardening practices
  - -change your watering practices, consider plant density, prune or not.
- Treat pest or disease

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## Sustain - Some Solutions to Pest/Disease Problems

### Prevention

- Practice good garden hygiene
- Rotate crops—prevent pest buildup
- Good cultural practices—watering

### Biological controls

- Beneficial insects (buy or attract them)
- *Bacillus thuringiensis* (B.t.)



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## Sustain - Some Solutions to Pest Problems

### Non-Chemical Controls

- Trap them—use cardboard, overturned cantaloupe, plant trap crops
- Barriers—block them with row covers
- Hand pick—slugs, snails, caterpillars, leaf miners

### Chemical Controls

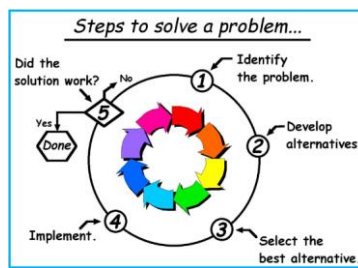
- Pest Specific organic/conventional pesticides
- Broad spectrum organic/conventional pesticides



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## Sustain - Check Results after Interventions

1. Did things get better? If not, repeat steps 1-4
2. Resources to get help with your veggie problems:
  - Master Gardener clinics
  - WSU publications
  - Demo gardens



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## Info on pesticides

**Pesticide** – a broad category of chemical agents

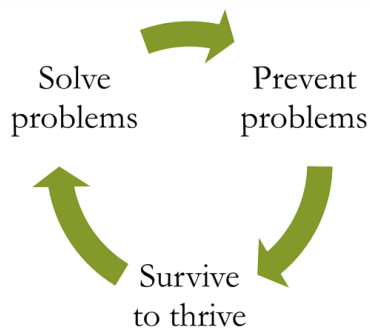
- Herbicide - a substance that kills plants/weeds.
- Insecticide - a substance that kills insects.
- Fungicide - a substance that kills fungi.
- Rodenticide - a substance that kills rodents.

**READ** and **FOLLOW** all label instructions

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## Sustain - Summary

- Take preventative steps to avoid problems.
- Use good gardening practices.
- Be a good problem solver.



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## Savor

- Easiest and most enjoyable part of gardening.
- Timing is important
- Nurture and feed yourself and others
- Take satisfaction in a job well done



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## When to Harvest Watermelon



Tendril nearest  
fruit turns brown

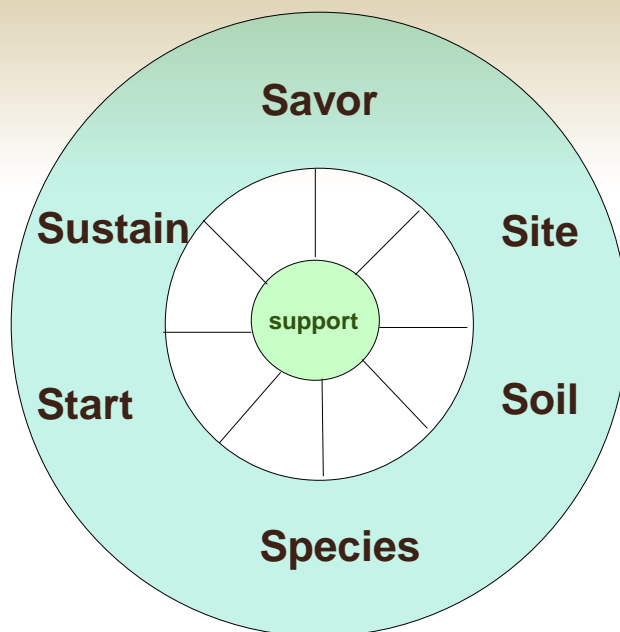
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## Points of emphasis

- Get and use a gardening calendar.
- Get a soil test & follow the recommendations
- Use a moisture meter.
- Enjoy the garden.

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## Support

### Master Gardener Program - King County

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

- Demonstration gardens
- Plant clinics
- Education outreach
- Science-based publications

### Master Gardener Foundation of King County

<http://www.mgfkf.org/>

- Fund raising, for the above



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## Questions?



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# Growing Groceries

<http://www.mgfkf.org/resources/growinggroceries>

Gardener Education Supported by



Master Gardener Foundation of King County



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## Fair Use

- **Slide 11:** <https://hopefarmblog.wordpress.com/2016/05/04/how-to-use-a-mason-jar-to-test-your-soil/>
- **Slide 14:** <https://www.rootssimple.com/2011/04/till-vs-no-till/>
- **Slide 16:** [https://www.gardenersedge.com/images/500/5976T\\_1.jpg](https://www.gardenersedge.com/images/500/5976T_1.jpg)
- **Slide 19:** <https://www.amazon.com/Red-Mulch-Plastic-Embossed-Solution/dp/B00BD70XB0>
- **Slide 20:** <https://trashbackwards.files.wordpress.com/2012/05/p1090956.jpg>
- **Slide 20:** <http://1.bp.blogspot.com/-0j0KOj7vQQc/UISbBwNYJkI/AAAAAAAAAFvo/K3GFfMF1R1w/s1600/row+cover.JPG>
- **Slide 22:** <https://www.flickr.com/photos/bizzyb0t/5833947740>
- **Slide 25:** <https://i1.wp.com/www.leereich.com/wp-content/uploads/2013/09/Corn-poor-pollination.jpg>,  
[http://gardenmentors.com/wp-content/uploads/2015/07/2015\\_07\\_zucchini\\_pollination.jpg](http://gardenmentors.com/wp-content/uploads/2015/07/2015_07_zucchini_pollination.jpg)
- **Slide 27:** <http://thecollaboratory.wdfiles.com/local--files/2013-philosophy-of-thought-logic/steps-to-problem-solve.jpg>
- **Slide 39:** <http://sacmg.ucanr.edu/files/244416.jpg>
- <https://www.plantedwell.com/balcony-garden-ideas/>
- Special thanks to Gia Parsons and Heidi McKibbin Copper for many great photos.

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