

Garden to Table Series

From Soil to Sprouts: Vegetable Gardening Fundamentals

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Ventura County Master Gardener

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■ UC Master Gardener Program

"The Mission of the UC Master Gardener Program is to extend research based knowledge and information on home horticulture, pest management, and sustainable landscape practices to the residents of California and be guided by our core values and strategic initiatives."



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State Evaluation

- You will receive an email survey from UCANR(University of California Agriculture and Natural Resources) in about 3 months from this talk.
- The short survey provides us the tools we need to grow and improve the quality of our program. We do not sell or share your contact info with anyone else.
- By answering the email survey, you help us demonstrate the impact of our classes and we will continue to receive funding from UCANR and other sources.



Inspect your Citrus!

- Asian Citrus Psyllid (Insect)
- HLB (Disease)
- If your tree gets this disease it will die in 3-5 years
- There is no cure
- Inspect your trees for the insect and its nymphs shown on the right.
- If detected, spray your trees
- Do not treat trees when bees are active
- Control ants in your trees
- Visit CaliforniaCitrusThreat.org
- Visit ipm.ucanr.edu



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New Invasive *Aedes* Mosquitoes

Aedes aegypti and *Aedes albopictus* are urban mosquitoes that feed on humans.

- They are aggressive **day-biters** found both indoors & outdoors that spread diseases including Zika, Chikungunya, and Dengue.

Both *Aedes* species lay eggs in water holding containers as small as a bottle cap.

- Eggs can survive more than **12 months in dry conditions!**
- They detect where water has collected before and **lay eggs there to wait for water.**

Ways to prevent and control *Aedes* mosquitoes:

- **Eliminate standing water:** Regularly inspect for standing water and eliminate it.
- **Block yard drains:** Cover or block yard drains between May and October.
- **Replace landscape:** Replace your landscape with California native plants to keep mosquitoes away.
- **Scrub containers:** Scrub containers that have been left outside with warm soapy water and a brush before throwing them away or storing them in a dry place.
- For more information go to <https://vcrma.org/invasive-aedes-mosquitoes> or the front page of our website



The Objectives of this Talk:

Learn how to enjoy an endless supply of fresh, nutritious vegetables from your own garden:

- Learn essential gardening basics, tools, and safety.
- Hear about garden planning and site selection considerations.
- Discover how to choose the right vegetables for your space.
- Build foundational gardening vocabulary and knowledge.



Image Courtesy UCANR



Let's Start with Tools of the Trade...

- **The Gardener:** clothing, shirts, shoes, hats, and gloves.
- **The Plants:** location, light, climate zone, container, seeds/transplants, soil, food, water, support, and basic gardening terms.
- **The Equipment:** soil preparation, digging, cutting, harvesting, and tool maintenance.
- **The Bling:** comfort accessories, things with pockets, planners & journals, and organizing items.



Image Courtesy of Amazon.com

What do I really need?



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The Gardener – Head to Toe...



Shirt/Tops:

- Weather & plant appropriate
- Layering as needed
- Sun and bug protection
- Comfort

Pants/Shorts/Skorts:

- Weather & plant appropriate
- Comfort when bending and stretching (think overalls)
- Pockets are handy



Image Courtesy of TGarman



The Gardener – Hats and Sunglasses...



Image Courtesy of sandiegohat.com



Image Courtesy of womanswork.com

- **Sun Protection** - brim large enough to keep sun off your face and ears – but not floppy
- **Breathability** – keep from overheating
- **Fit** – comfortable - snug but not pinching – look for adjustability
- **Washable** – they will get dirty
- **Color** – darker colors will be hotter
- **Netting** – for bug/bee protection



Image Courtesy of lifeisgood.com



Image Courtesy of farmersdefense.com

Don't forget sunglasses and sunscreen



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The Gardener – Footwear to Protect Your Feet



- **Protection** – Closed-toe and sturdy (thornproof) sole
- **Comfort** – spacious and supportive
- **Durability** – leather or rubber
- **Traction** – safety on uneven or wet surfaces
- **Mud Proof** – keep feet dry and easy to clean
- **Flexibility** – keep feet from getting tired
- **Ease of Use** – easy on/off
- **Breathability** – especially if you don't wear socks

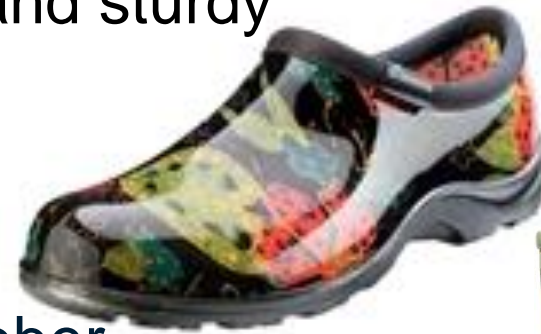


Image Courtesy of slogger.com



Image Courtesy of www.rei.com

Dark color socks don't show stains



Image Courtesy of crocs.com



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The Gardener – Gloves to Protect Your Hands

What you are doing will determine the type of gloves you need – thicker, padded gloves for pruning, thin, lightweight gloves for planting or weeding.



- **Material** – leather for protection, lightweight for dexterity.
- **Fit** - you should be able to put the gloves on and take them off easily, but the cuffs should fit snugly enough to keep debris out.



- **Features** - waterproofing, cushioning, breathable fabrics, longer lengths, touchscreen, or Velcro wrist straps to keep them secure.



The Plants...



Image Courtesy of <https://www.pressenterprise.com/>



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The Plants – Location Considerations

When deciding where to plant your vegetable garden, choose the best available location by keeping the following factors in mind:

- **Soil** - can be amended if needed.
- **Level Ground** - is easier to prepare, plant, and irrigate – if sloping, run rows across the slope, not up and down, to keep the soil from washing away during irrigation.
- **Water** - easy access to water source.
- **Light** - 6 to 8 hours of full sun per day – if shaded, plant leafy crops and root vegetables in those areas and save the full sun areas for crops that bear fruit (tomato, eggplant, squash etc).
- **Access** - close to home for convenience.



The Plants – Container - Raised Beds



- Soil will be warmer.
- Improved soil condition and moisture availability with less compaction.
- Lower maintenance for weeding, irrigation, pest control.
- Creative design can make the raised bed into garden art.
- Can be variable in height.



The Plants – Container Gardening



Courtesy of www.canr.msu.edu

- Almost any vegetable will grow as a container plant.
- You need a container with sufficient volume and depth.
- You need a container with good drainage.
- Use a good potting soil.
- Watering must be regular for containers.



The Plants - Seeds or Transfers?

Planting seeds directly in the garden has several advantages:

1. Greater variety
2. Cost-effective
3. Control over growing conditions
4. Stronger root systems – avoid transplant shock
5. Suitable for certain plants

Seed starting requires more time and attention, and there's a great risk of failure from pests or weather.

Transplants, or seedlings started indoors or purchased from nurseries, offer their own benefits:

1. Earlier harvests
2. Extended growing season
3. Stronger seedlings
4. Space-saving
5. Higher success rate

The main drawbacks of transplants are higher cost and potentially limited variety compared to seeds.

The choice between seeds and transplants depends on various factors:

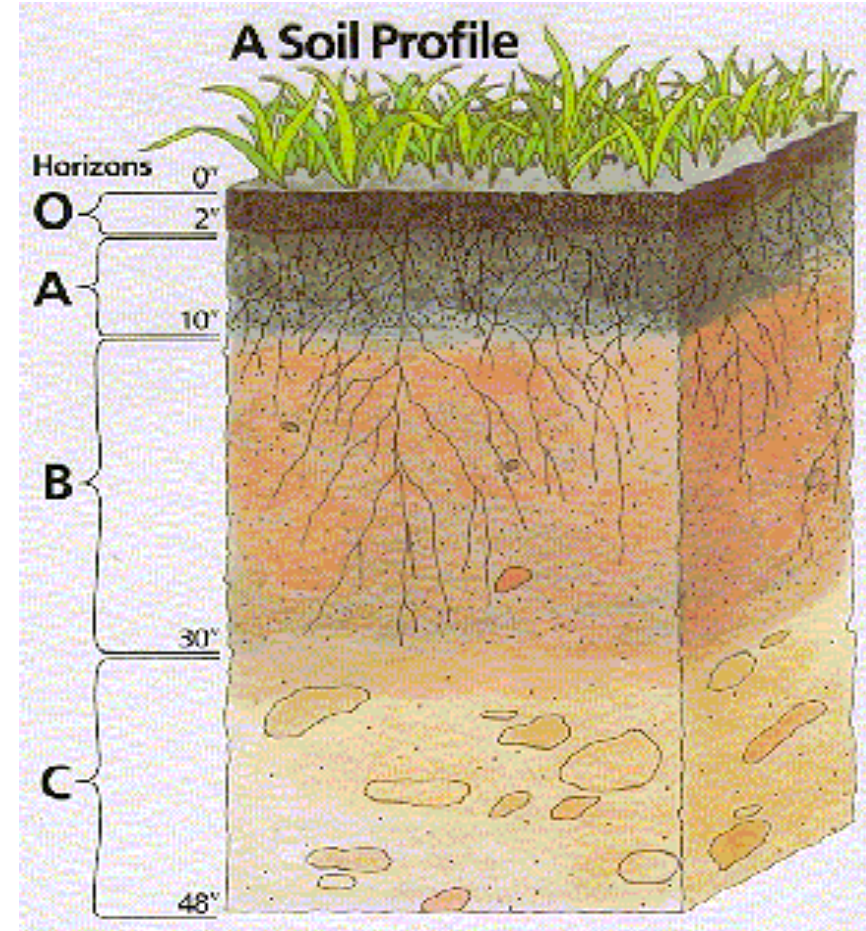
1. Plant type
2. Growing season length and time to maturity
3. Timing
4. Experience level

Root crops (carrots, beets, radishes, etc...) should be directly sown as seeds because they do not transplant well due to their taproot structure, and greens (lettuce, spinach, Swiss chard, etc...) also do well as direct sow.



The Plants – Soil

- **Soil is comprised of** - minerals (from decomposed rock), air, water, and organic matter (or stuff that was once alive).
- **Soil contains** bacteria, fungi, actinomycetes; and algae (beneficial microorganisms), along with friendly earthworms.
- **Plant roots and most microorganisms** “breathe,” so they need air - the ideal soil composition for growing plants is 45% minerals, 5% organic materials, 25% water and 25% air.



The Plants – Soil Preparation

- **Remove** weeds and debris from garden area.
- **Level the area** – create a smooth, even planting surface – especially if sowing seeds.
- **Amend** with organic matter, 6 to 12 inches, to enrich soil nutrients and feed beneficial microbes.

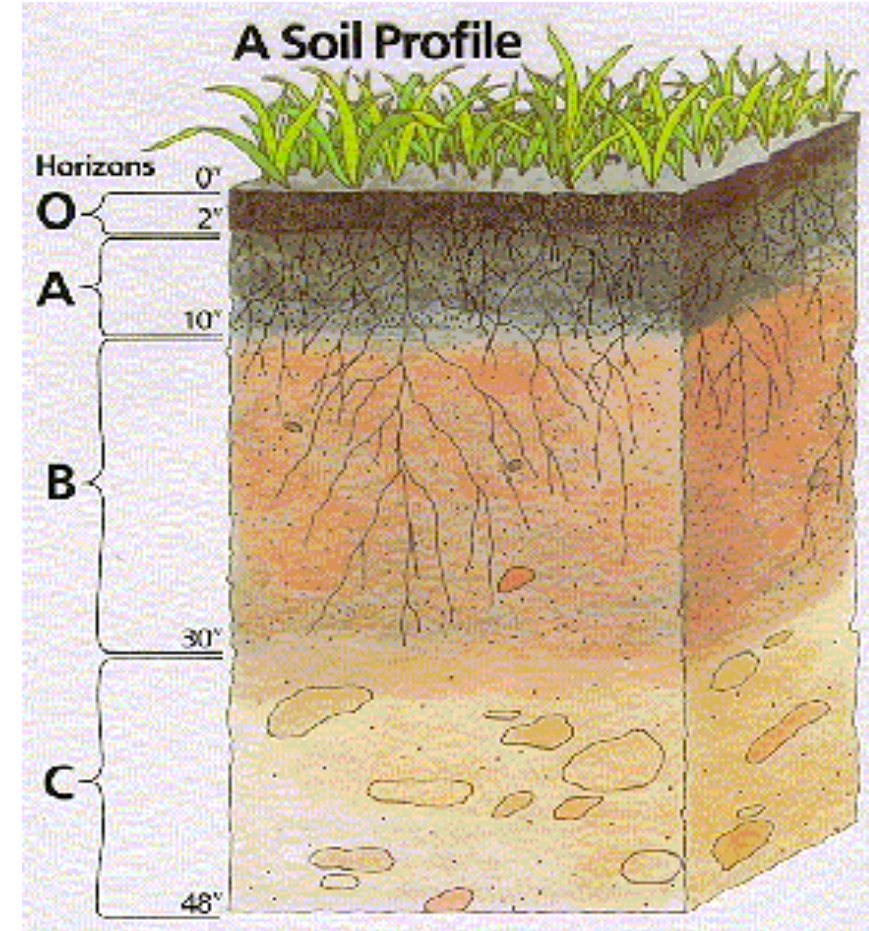
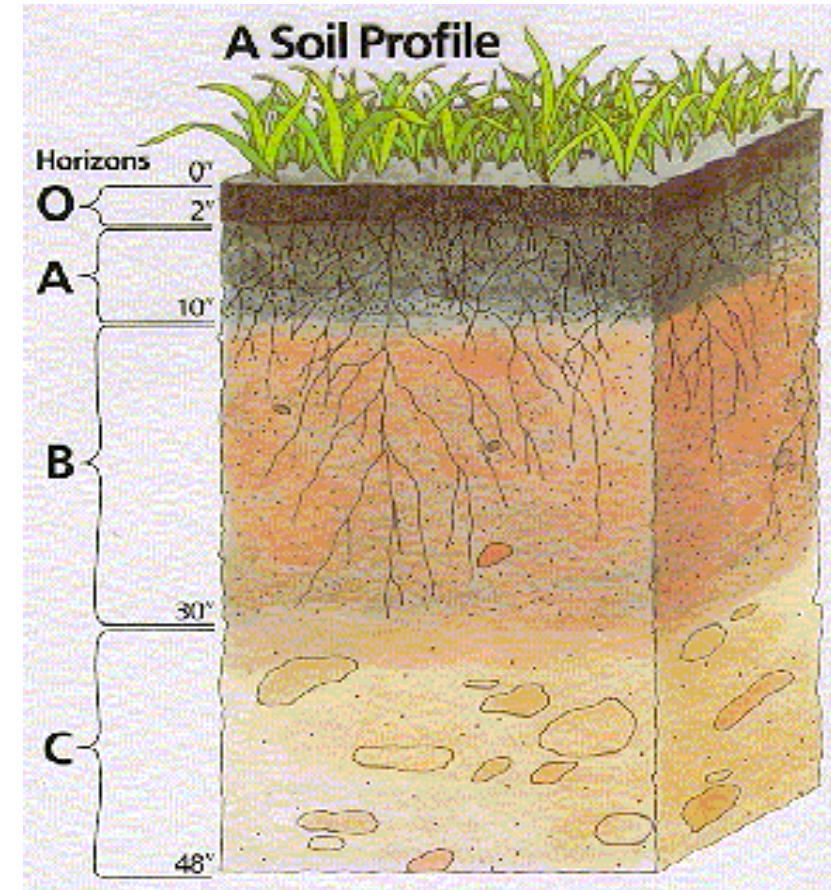


Image Courtesy of ucanr.edu



The Plants - Soil Preparation

- **Using Raised Beds or Containers?** – Fill beds with a high-quality potting mix or blend of compost, topsoil and vermiculite.
- **Fertilize**, just before planting, using a balanced (13-13-13) fertilizer.
- **Mulch** – 3 to 4 inches.



Your objective - give your soil some tender loving care.



The Plants – Food (Fertilizer)

The Real Meaning of NPK

N	P	K
<u>nitrogen</u>	<u>phosphorus</u>	<u>potassium</u>
Green, leafy material	Roots and blooms	Disease resistance
UP	DOWN	ALL-AROUND

Just A Homeowner

- Use a General Purpose (10-10-10 or 13-13-13) fertilizer
- Don't over fertilize – and
Mulch...Mulch...Mulch...



The Plants – Water (Irrigation)

- Water early in the morning or evening to reduce evaporation – and try not to get the leaves wet – only the soil.
- Check soil moisture before watering. Water deeply but less frequently to encourage deep root growth.
- Adjust watering based on seasonal changes - avoid overwatering.
- Observe your plants and adjust watering as needed.
- Mulch...Mulch...Mulch... 3” – 4” will reduce soil moisture fluctuation, moderate soil temperature, and discourage weeds.



The Plants – Support – Why?

- **Prevent breakage** as plants grow and become heavy.
- **Guide growth** such as vine crops like cucumbers, melons, and squash.
- **Improve air circulation** to help prevent diseases and funguses.
- **Help crops ripen** by lifting fruit off ground.



Image Courtesy of gardeners.com



The Plants – Support – How?

- **Cages** – install shortly after plants are established. Pruning is not necessary.
- **Stakes** – use stakes at least 6' long – drive them 1' into soil about 4" – 6" inches from plant. Use heavy twine or strips of cloth every 10" as plant grows. Pruning is usually required.
- **Trellises** – similar to staking, plants are tied at regular intervals and pruned.



Image Courtesy of TJGarman



The Plants – Support – What?

- **Beans and Peas:** need something to climb. Bush beans don't need support.
- **Squash, melons, and cucumbers:** Vine crops like these can produce straighter fruit if grown on a trellis.
- **Tomatoes:** Indeterminate varieties, and cherry tomatoes. Determinate do not.



Image Courtesy TGarman



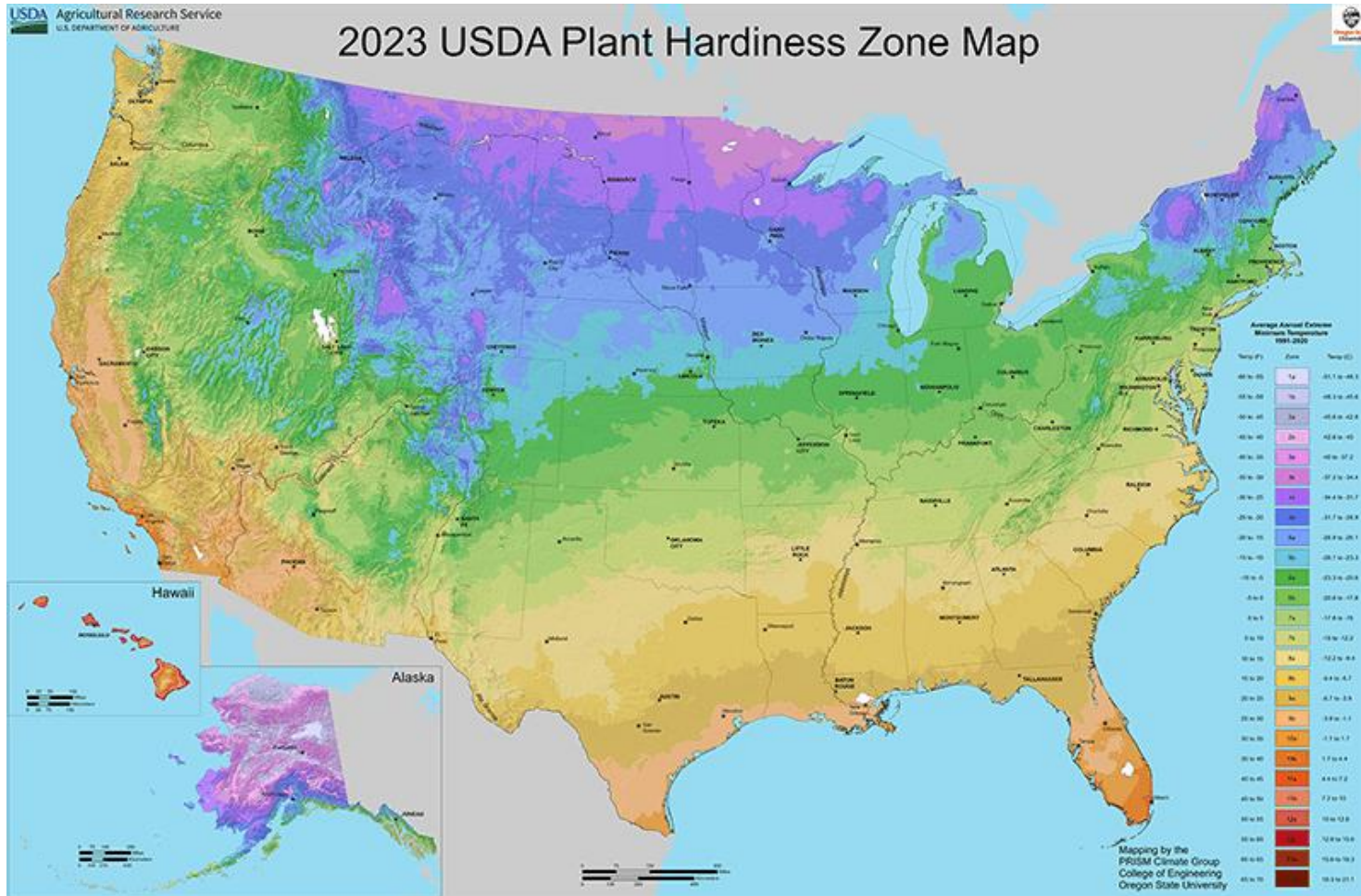
The Plants – Gardening Term - Climate Zone?

Gardeners in the western United States sometimes are confused when confronted with zones created by the USDA vs. climate system created by Sunset Magazine.

The Sunset zone maps, considered the standard gardening references in the West, are more precise than the USDA's, since they factor in not only winter minimum temperatures, but also summer highs, lengths of growing seasons, humidity, and rainfall patterns.



The Plants – What is My Zone (USDA)?



Simi Valley – 10a
Moorpark – 10a
Oak Park – 10b
Thousand Oaks – 10a and 10b
Newbury Park – 10a
Camarillo – 10a
Oxnard – 10a
Ventura – 10a
Santa Paula – 10a
Fillmore – 10a
Ojai – 9b and 8b
Oak View – 9b
Microclimates can affect planting

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



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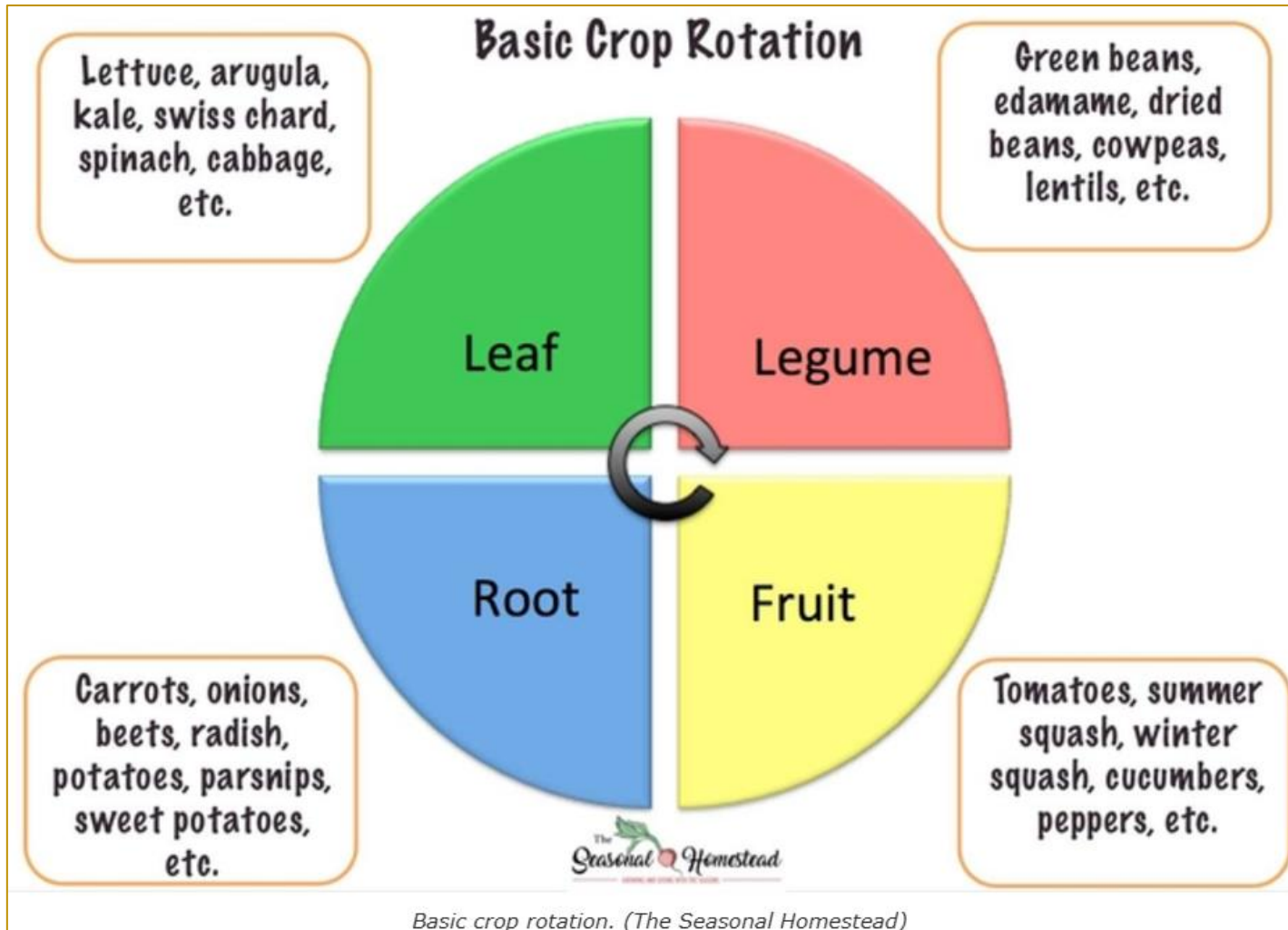
The Plants – What is My Zone (Sunset)?

- **Zone 18:** Above and below the thermal belts in Southern California
- **Zone 19:** Thermal belts around Southern California's interior valleys
- **Zone 20:** Cold winters in Southern California
- **Zone 21:** Thermal belts in Southern California
- **Zone 22:** Cold-winter portions of Southern California
- **Zone 23:** Thermal belts of Southern California's Coastal Region
- **Zone 24:** Marine-dominated Southern California Coast

Camarillo – 23	Moorpark - 21	Ojai -20	Oxnard - 23
Santa Paula - 21	Simi Valley – 18-19	Thousand Oaks – 18-20	Ventura – 24



The Plant – Gardening Term – Crop Rotation



Basic crop rotation. (The Seasonal Homestead)

Why rotate crops?

- Interrupts disease and insect problems
- Replenishes nutrients in the soil
- Encourage healthy root systems
- Increases productivity



The Plants – Gardening Term – Life Cycle

- **Annuals** - Complete their life cycle in one growing season.
 - Examples - tomatoes, pumpkins, peas, lettuce, and cucumbers
- **Biennials** - Complete their life cycle in two growing seasons, these often go dormant in the winter and then flower and produce new vegetative growth in the second year.
 - Examples – carrots, parsley, cabbage, cauliflower
- **Perennials** - Can live for many years, they can be evergreen or deciduous and can be more sustainable than annuals because they require less water and nutrients.
 - Examples – artichokes, asparagus, rhubarb



The Plants – Seed Packets – How to Understand

The cultivation information will vary from seed company to seed company. Here is a list of the information you should look for:

- **Picture** - of the plant in flower or harvested fruit or vegetable.
- **Name** - of the variety and whether it is open pollinated, heirloom, or hybrid.
- **Climate Zone** – recommended planting time by zone.
- **Description** - of the plant including common and scientific names, plant height at maturity, days to harvest, and habit (i.e., climbing, upright, etc.).
- **Suggested Planting** - such as in containers, in beds, etc.



The Plants – Seed Packets – Continued

- **Seed Count** - or weight of the in the packet seeds.
- **Year Packaged** - important since seeds age, and their viability decreases (less will germinate in subsequent years).
- **Planting Directions** - when to plant the seeds depending on climate zone, planting depth, spacing, light exposure requirements, whether or not the seeds should be planted indoors prior to planting outdoors, and basic directions for the care of the plant.
- **Days to Harvest** – days start counting from date transplanted into the garden, for direct sow – it's when the plant has it's first "true leaves".
- **Tips** – might include specific information about this variety.



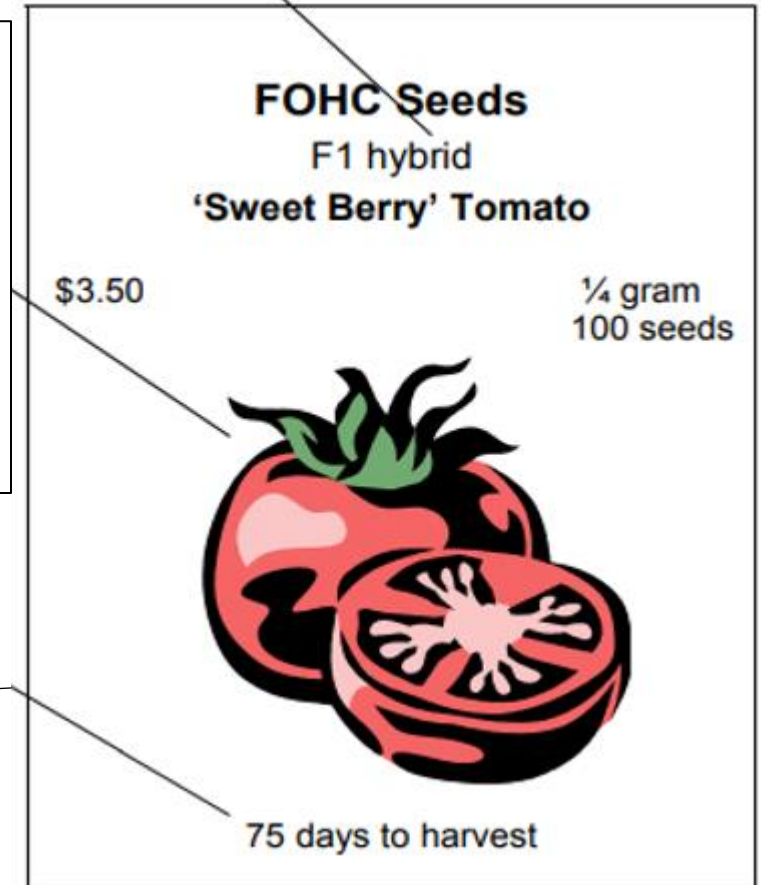
The Plants – Seed Packets

Days to harvest – assumes ideal conditions. If summers are cool, add 50% for fruit and flower bearing crops, unless seed company caters to your region. For leaf crops, estimated may be more accurate. For plants usually started indoors, days start counting from date of transplanting into the garden*.

Hybrid designation explains why cost may be higher. Hybrids are generally more vigorous and uniform than non-hybrids. However, seeds generated by hybrid plants will produce offspring different from the plant from which it was saved.

If there is a photo or drawing, it may not depict the actual variety.

<https://sacmg.ucanr.edu/files/164217.pdf>



* When seeds are sowed – the days are counted from the first true leaves.




The Plants – Seed Packets

F1/hybrid 'Sweet Berry Tomato'

Planting dates:
Sow indoors before last frost is predicted.

Dates of last frost:



Planting directions: Scatter seeds in flats, cover with 1/8 to 1/4 inch potting soil; water in well. Give plenty of light. After seedlings develop four sets of true leaves, transplant into small pots. When danger of frost is past and soil has warmed to 65°F, plant out in the garden in rich soil in full sun. Space plants 2 to 3 feet apart.

Tip: This tomato is indeterminate. Tie each plant to a 6-foot stake or support in a tall, heavy cage to keep fruit off of the ground.

Packed for 2013

Tips often are not optional. Take them seriously; they usually address a variety's shortcomings or special needs.

Sow indoors implies that the plant needs a long, frost-free season to develop – and requires transplanting. Sow in garden implies frost tolerance.

Last frost guesstimates are usually too general for the West, where a few miles can mean days of difference. For local planting times, contact your cooperative extension office.

Date is year in which seed should be planted.

<https://sacmg.ucanr.edu/files/164217.pdf>



The Plants – Basic Gardening Terms

- **Determinate and Indeterminate Plants**
 - Determinate plants grow in a more bush-like shape and produce fruit and finish all at once, and
 - Indeterminate are vining plants and continue producing fruit throughout their life cycle.
- **Germination** - when a seed sprouts and starts to grow.
- **Hardening Off** - taking seedlings outdoors for short and then increasingly longer periods of time to get them used to elements.

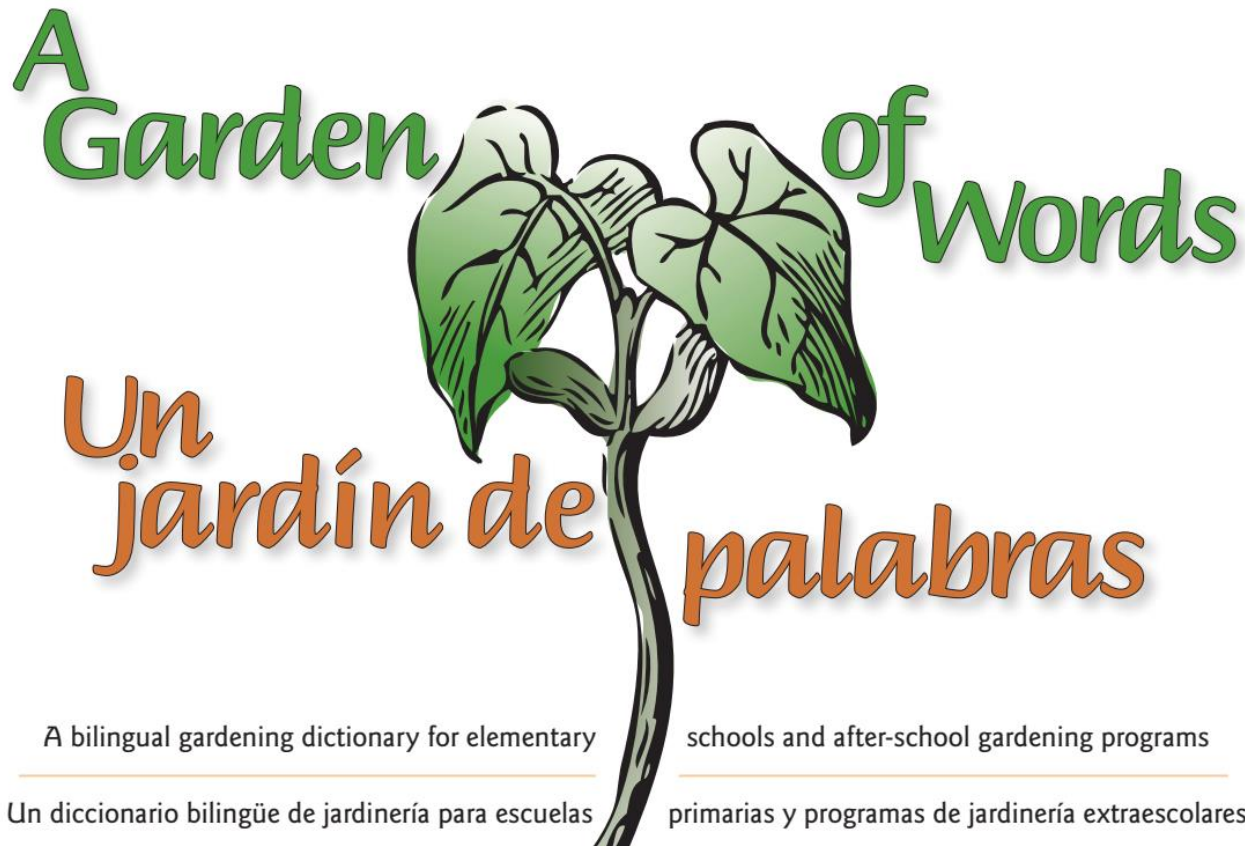


The Plants – Terms for Beginners

- **Thinning Plants** – removing some plants or parts of plants to allow others to grow, it is important for healthy plant growth and development and can help maximize crop production.
- **Bolting** - when a plant prematurely starts to flower and produce seeds, often resulting in a reduced harvest quality.
- **Heirloom Seeds** - are usually at least 50 years old, never hybrids or GMOs.
- **Succession Planting** – plants seeds every few weeks to ensure a continuous harvest.



The Plants – Gardening Terms English/Spanish



<https://anrcatalog.ucanr.edu/pdf/8423.pdf>



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The Equipment...



Image Courtesy of menards.com



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The Equipment – Digging and Raking

- **Spade** - a staple for garden maintenance and is used for planting trees, turning over compacted soil in beds, and moving soil and organic compost. This is a garden workhorse.
- **Leaf rakes** have a large, fan-like head of tines and come in a variety of head and handle sizes.



Image Courtesy of ucanr.edu – Butte - Alosi



The Equipment – Trowel

Look for:

- Available in many lengths depending on task; a 14-inch trowel offers versatility.
- Single-piece steel construction or aluminum alloy
- Can be used in place of a soil knife
- Vinyl, easy to grip handle with hanging loop
- Powder-coated finish

Uses:

- Potting, planting and light digging, weeding
- Can be used in place of a garden knife if kept sharp.



The Equipment – Cutting (Hand Pruners)

Short-handled tools intended to cut branches up to ½ inch.

- **Bypass blades** - a curved upper blade that glides past a lower curved – best choice for most cutting tasks.
- **Anvil blades** - a straight-edged upper blade that meets the a flat-surfaced lower blade – better for cutting dead wood.
- **Scissor** - two short, straight, sharpened blades, designed only for lightweight tasks such as pruning tiny twigs and flower or herb stems.



Image Courtesy of
ucanr.edu



The Equipment – Cutting (Loppers)

- Long-handled tools, which are designed to cut branches up to 1 to 1½ inches in diameter. Avoid using them for pruning, since they tend to damage branches.
- Loppers come in both bypass and anvil styles and work the same way as hand pruners.
- Handles can be long, short, or adjustable.



Image Courtesy of ucanr.edu



The Equipment – Knife (Hori Hori)

Look for:

- 6 ½ inch blade
- Vinyl plastic sheath with belt loop
- Wooden handle
- Measurements on the knife

Uses:

- Light digging, cut through soil, uprooting weeds
- Clearing away soil from the crown of a plant
- Light planting, dividing flowers and transferring small plants



Hori Hori or garden knife

Image Courtesy of menards.com



The Equipment - Tool Cleaning

Proper tool care starts with cleaning & maintenance

- Remove soil, plant residue, and rust with brush (wire if needed). Good habit - clean tools after each use.
- Wash tools with warm, soapy water – some tools can be taken apart to clean.



Image Courtesy of Michelle Chin



The Equipment - Tool Cleaning

- Thoroughly dry tools.
- Sanitize with rubbing alcohol - especially the blades - this will prevent disease transmission.
- Lubricate, with household oil, any blades and moving parts.
- Oil wooden handles with linseed oil.



Image Courtesy of Michelle Chin



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The Equipment - Tool Maintenance

- If needed, sharpen dull blades with sharpening tool (video available).
- Store tools where they can be hung and out of the way to prevent damage to both the user and the tools.
- Keep tools in a dry place to prevent rust.



Image Courtesy of Michelle Chin

Gather your hand tools for winter cleaning and maintenance. Photo by Michelle Chin.



The Bling...



Courtesy of Amazon



Image Courtesy of Michaels.com



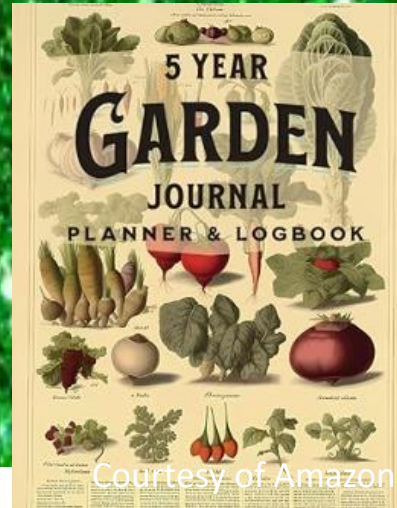
Courtesy of Amazon.com



Courtesy of brecks.com



Courtesy of garrettwade.com



Courtesy of Amazon

Image Courtesy of pixabay.com



The Bling – Comfort Accessories

- Kneeling Pads and Seats – with or without wheels
- Garden Tool Caddy and Bucket Caddy
- Tool Apron and Harvest Apron
- Garden Clipping Bag
- Wagons and Wheel Barrels



Image Courtesy of Agtec.com



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The Bling – Journaling and Organizing

- Garden Journals
- Garden Books
- Plant Markers
- Seed Storage Boxes and Envelopes
- Art for the Garden



Image Courtesy of jimsmowing.com.au



Conclusion and Questions... What do I really need?

- **Clothing** that is comfortable and protects you from thorns and sun.
- **Space** with sun and water.
- **Tools** to dig and cut.
- **Time** to nurture and grow.
- **But most important** – the



desire to create life, feed your soul, and connect with the earth!



Look for More Spring Classes for Vegetable Gardening

- The Green Scene: Growing Leafy Bounty Year-Round
- Spring into Action: Beans & Squash Success
- Tomato Talk: Secrets of Growing Perfect Tomatoes
- Some Like It Hot: Mastering Pepper Production
- Vine Time: Growing Magnificent Melons & Cucumbers
- Fresh & Flavorful: Mastering Mediterranean Herbs
- VC MG Hands on Irrigation Classes – 2nd Saturday from 9:00 – 11:00 – located at the Calleguas Municipal Water District



Resources

Links:

- Soil - [https://ucanr.edu/sites/soils/Soils for Homes - Gardens/](https://ucanr.edu/sites/soils/Soils%20for%20Homes%20-%20Gardens/)
- Climate Zones USDA - <https://planthardiness.ars.usda.gov/>
- Climate Zones Sunset - <https://sunsetplantcollection.com/climate-zones/>
- Irrigation - <https://mg.ucanr.edu/Gardening/Edible/Caring/Irrigation/>
- Handbook for Beginners - <https://ucanr.edu/sites/ccmg/files/292083.pdf>
- Understand a Seed Packet - <https://sacmg.ucanr.edu/files/164217.pdf>
- Seed Packets - <https://ucanr.edu/sites/MarinMG/files/186287.pdf>
- Cutting Tools - <https://ucanr.edu/blogs/dirt/index.cfm?tagname=hand%20pruners>
- Hand Tools - <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=20136>
- Tool Maintenance - <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=58665>

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Got Gardening Questions?

Contact the FREE

Master Gardener Help Desk

Email: mgventura@ucdavis.edu

For Upcoming Classes Go To

<https://ucanr.edu/sites/VCMG>



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and see a list of
upcoming classes,
visit our website at

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