



# Master Gardener Program

University of California Cooperative Extension



## UC Master Gardener Program

University of California Cooperative Extension  
Napa County

**Welcome to Spring and Summer  
Vegetables**  
March 2020

# Today's MG Team

- Helen Dake
- David Key
- Carolyn Czapleski
- Mary Cipriano



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# Parking Lot

- What are you most interested in learning about?
- What vegetables would you like to grow?



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# Plan ahead

- Plant vegetables that your family likes and in quantities that you will use.
- Plant only as large a garden as you can maintain easily.
- Plant disease-resistant varieties that are adapted to your area.



# Location, location

**Level Ground**

**Close to Home/Kitchen**

**Adequate Light** - 6-8 hours of  
sunlight

**Good Soil**

**Water Supply**



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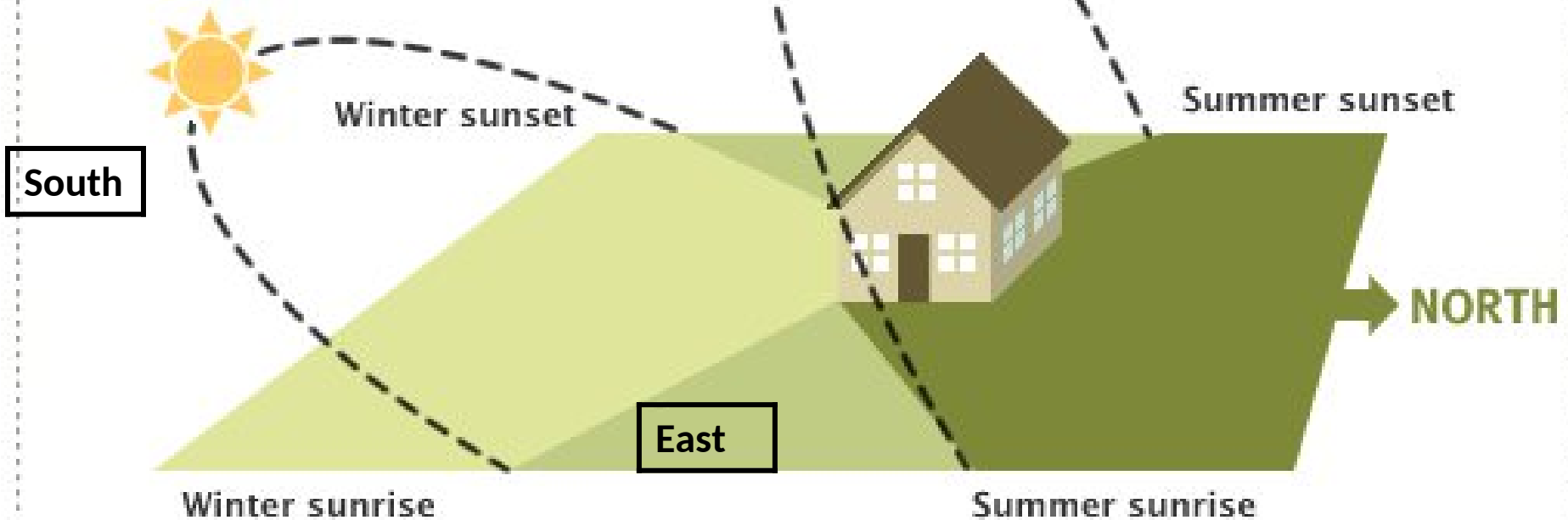
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# SUNLIGHT 6-8 Hours Daily

West

-  **Excellent location:** Never in shade
-  **Good location:** Some shade either in the morning or the afternoon
-  **Poor location:** Some shade almost all day

## A Garden's Optimal Orientation to the Sun





Plants grow well in soil that ...

Has a healthy  
physical structure

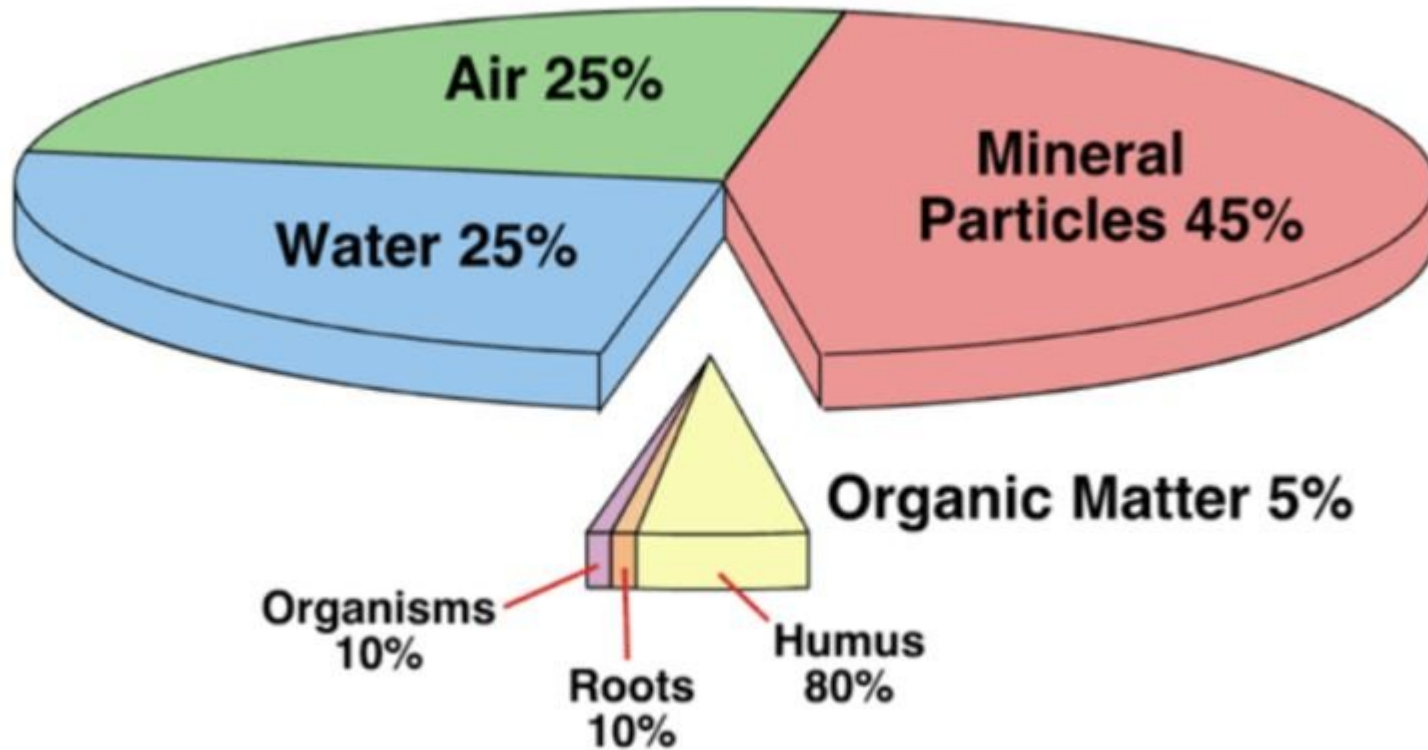
Contains essential  
micronutrients



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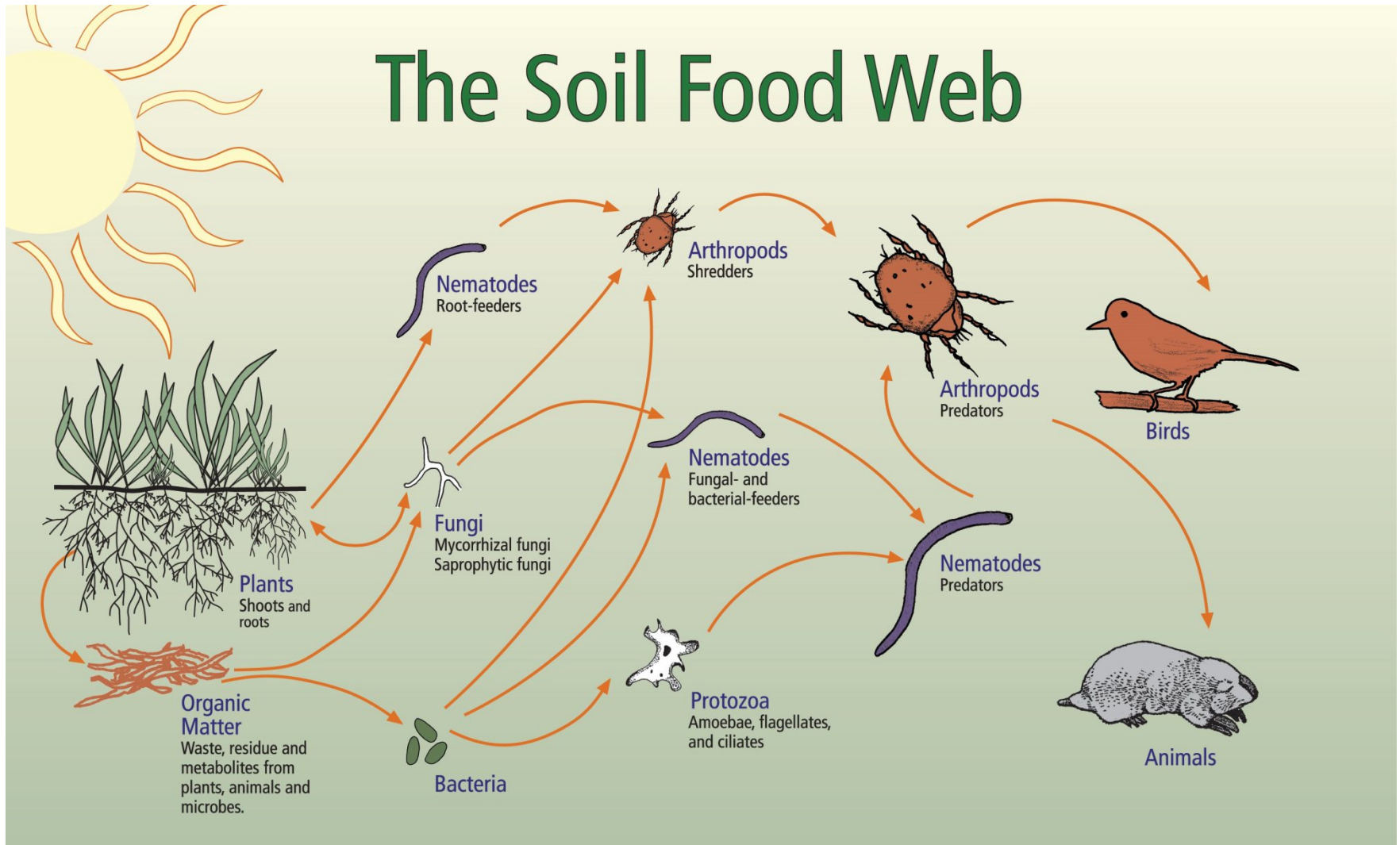
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# What is Soil?





# The Soil Food Web



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# Five Principles of Healthy Soil

- Disturb the soil as little as possible,
- Keep green living plants in the ground as often as possible,
- Utilize a diversity of plants and root structures,
- Keep the soil covered at all times, and
- Incorporate animals.



# CONSERVE THE SOIL YOU HAVE

- **Avoid compaction.** *Never try to work wet soil.*
- **Avoid excessive soil disturbance.**
  - Worms and microbes can be destroyed by a rototiller.*
  - Can bring up weed seeds.*
- **Avoid overuse** of chemical and synthetic fertilizers, herbicides and pesticides, over-fertilizing, over-watering, severe under-watering. ***Moderation is key.***



# Some essential garden terms that people sometimes mix up

Amendments



Compost



Mulch



Fertilizer



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# IMPROVING YOUR SOIL

- Amendments are materials you add to soil to improve its structure, tilth, and suitability for root growth.
- Barnyard manure (best if composted first)
- Green Manure and Cover Crops (E.g. Fava Beans, Mustard, Vetches)
- Packaged mixes
- Compost



# Distinguish between amendments that can be added right before planting and those that can't

- Some amendments (animal manure, green manure) should be added early enough that organic materials can break down.



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# One of the best amendments is *compost*

- Compost develops into humus to improve soil structure
- Improves drainage and aeration
- Conserves soil moisture
- “Finished” compost can be mixed into the soil right before planting



# Compost:

- Make it at home
- Buy it from recycling plants
- Buy it in bags from stores (most expensive option)





**Mulch:** Material layered on top of the soil to cover and protect it.

Mulch : preserves moisture, reduces weeds, prevents erosion, also can slowly add some micronutrients.

Mulch is usually organic (leaves, grass clippings, compost, straw, etc.) but can be inorganic (e.g. plastic).

One of the best mulches is compost



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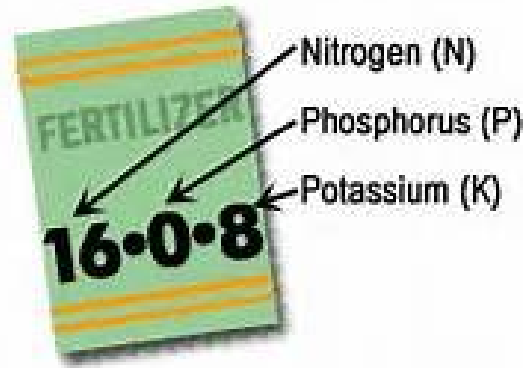
# Fertilizer

What do plants need?

Are we feeding the plants or the soil?



# Fertilizers



**5-X-X Nitrogen (N)**  
promotes green leafy  
growth

**X-5-X Phosphorus (P)**  
assists in flower, seed, and  
fruit production



**X-X-5 Potassium (K)** for  
root and tubers



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# Organic Fertilizer Examples

- Commercial organic fertilizers
- Animal manures
- Seaweed (kelp)
- Fish meal or emulsion
- Soybean meal
- Alfalfa pellets
- Bone and blood meals



# Synthetic Fertilizers

- Fast-acting
- Often less expensive
- Can be hazardous to plants or soil if used incorrectly or too much
- Key: Use according to the directions on the bag/box and in moderation to avoid environmental pollution.



# Ways to Fertilize

- Add to soil before planting (slow release forms are an option).
- Foliar feed: spray a mist solution to be absorbed by osmosis.
- Liquid solutions: use watering can or hose end system.
- “Side-dress” by working a granular fertilizer into top inch of soil near plant roots and water in well.



# Water Needs Depend on Many Factors

- Soil Type (sandy, clay, loam) and organic content/mulch
- Weather (sun, temperature, humidity, wind)
- Time of year (day length)
- Type of vegetable
- Growth cycle of the plant

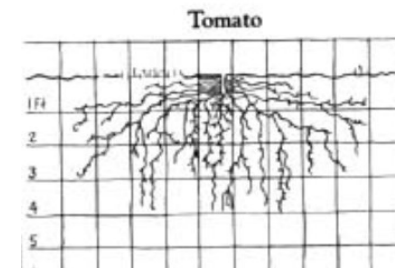


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# Root Depths of Vegetables

Shallow 1-2"	Moderate 3-4'	Deep >4"
Lettuce	Peppers	Tomatoes
Radishes	Carrots	Melons
Spinach	Cucumbers	Pumpkins
Broccoli	Beans, Peas	Bush berries
Garlic, Onions	Summer squash	Grapes



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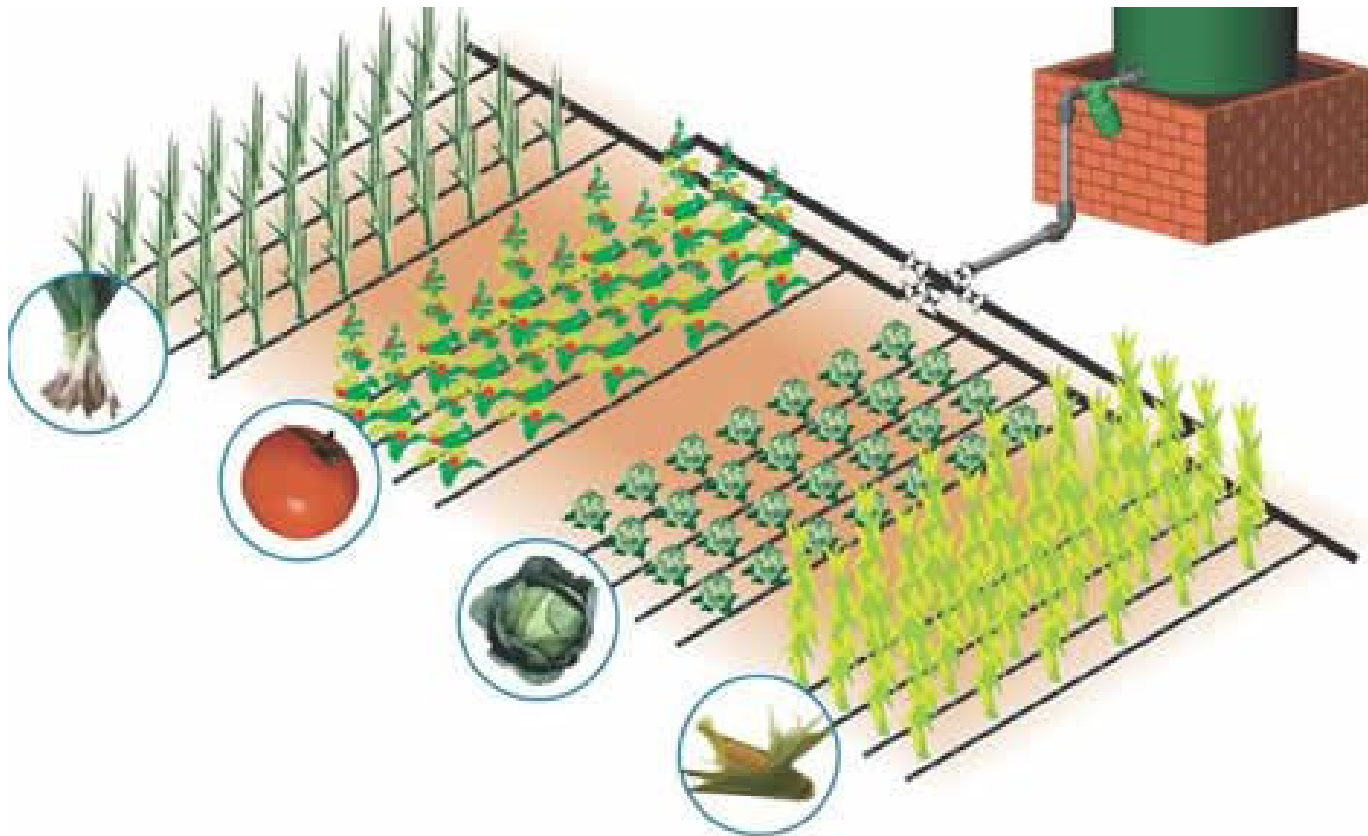


# Steps to Reduce Water Needs

- Compost
- Mulch
- Control weeds
- Plant in blocks, not rows
- Use a drip irrigation system
- Plant drought tolerant vegetable
- Plant young plants to reduce watering time/ amount



# Why is Drip Irrigation best?



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# When to Water

**Test:** Water if dry at 3-4 inches



- Shallow-rooted veggies need more frequent watering
- Best time of day is early morning or in evening.

**NOTE: Drooping leaves do NOT always mean the need for watering. Check the soil. Avoid overwatering. Roots can drown.**



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# Drought Tolerant Vegetables

- Pole beans
- Lima beans
- Summer squash
- Heatwave II tomatoes
- Black Diamond watermelon
- Corn
- Quinoa
- Herbs
- Sunflowers



# Crop Rotation

## CROP ROTATION CHART

	AREA 1	AREA 2	AREA 3	AREA 4
YEAR 1	 LEAVES	 FRUIT	 ROOTS	 LEGUMES
YEAR 2	 LEGUMES	 LEAVES	 FRUIT	 ROOTS
YEAR 3	 ROOTS	 LEGUMES	 LEAVES	 FRUIT
YEAR 4	 FRUIT	 ROOTS	 LEGUMES	 LEAVES

From: Scow Soil Microbial Ecology Lab, UC Davis



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# Companion Plantings

- Intercropping – pair plants with different growth habits (carrots and radishes, lettuce and tomatoes)
- Promoting pollination – plant flowers nearby
- Encouraging beneficials to manage pests
- Plants that repel or trap;
  - basil/onions w tomatoes
  - marigolds can repel nematodes
  - use as physical barrier
- Diversity encourages soil vitality



# Seasonal Planting Guide Napa Valley

WINTER/SPRING VEGETABLE PLANTING GUIDE FOR NAPA COUNTY

VEGETABLE	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	NOTES/COMMENTS
Broccoli	Plant seeds indoors/in greenhouse	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Harvest	Harvest	Harvest	Harvest	Harvest	Harvest	Harvest	Harvest	Harvest time depends on planting date and weather
Beets			Plant seeds	Plant seeds	Plant seeds	Plant seeds	Harvest	Harvest	Harvest	Harvest	Harvest	Harvest	Harvest	
Cabbage	Plant seeds indoors/in greenhouse	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Harvest time depends on variety and weather
Cantaloupe				Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Carrots			Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Cauliflower (early)	Plant seeds indoors/in greenhouse	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	
Chard (late)			Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Chard			Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Corn				Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Cucumber				Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Eggplant				Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Lettuce	Plant seeds indoors/in greenhouse	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Harvest time depends on variety and weather
Onions, Shallots			Plant sets (plant sets)	Plant sets	Plant sets	Plant sets	Plant sets	Plant sets	Plant sets	Plant sets	Plant sets	Plant sets	Plant sets	Harvest and store
Peas			Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Peppers			Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Potatoes				Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Harvest and store
Pumpkin				Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Radish			Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Snap Beans				Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant Lima beans 1 week after earliest snap beans, and until late May
Tomatoes		Plant seeds indoors/in greenhouse	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	Plant seedlings	
Watermelon				Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	
Zucchini				Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	Plant seeds	

Code:   
 Plant seeds (dotted pattern)   
 Plant seedlings (horizontal lines)   
 Harvest (solid green)   
 Range of season (grey)   
 Plant seeds indoors/in greenhouse (diagonal lines)

4/29/11

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# Seed Starting

- Seed packets and companies are a good source of info.
  - Time/temp.
  - Inside/outside
  - Depth
  - Distance
  - Growth characteristics



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# Seeds to Direct Sow in Ground

- Beans
- Beets
- Carrots
- Corn
- Cucumbers
- Lettuce
- Peas
- Radish
- Scallions
- Spinach
- Squash (winter and summer)
- Swiss chard
- Turnip



# Seed Starting How To

- Start 4-18 weeks ahead of time. Check time until transplant
- Add moistened potting soil to seed planters, tamp soil down, fill to within  $\frac{3}{4}$ " of top.
- Sow 2-3 seeds per unit.
- Add some soil, about 4x diameter of seed.
- Moisten thoroughly with mister.





# Cabbage/Brassica Family Members: Broccoli, Cauliflower



# Imported cabbageworm



# Biological control of caterpillars

**Bt: *Bacillus thuringiensis ssp kurstaki***



# Chard, Spinach



Scarlet  
Charlotte



Spinach



French White

# Chard: Leafminer



UC Statewide IPM Project  
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UC Statewide IPM Project  
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# Another Chard (and Brassica) Pest: Aphids



# Row cover is your friend



# Lettuce and Kale



# Snails and Slugs



# Tomatoes



# Verticillium and fusarium wilts



# Physiological conditions of tomatoes



# Peppers



Sun Scald



# Eggplant



Flea Beetle Damage



# Green beans, bush and pole



# Mite damage to bean leaves



# Cucumbers



# Cucumber beetle (spotted)



# Summer squash



# Squash blossoms



# Powdery mildew





# Master Gardeners Online



## UC Master Gardeners • Napa County

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[Garden Questions?](#)

[Events-Find us!](#)

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Mobile users to find offerings and events menu. Click the 'Vent'



The Master Gardener program is a volunteer organization associated with the University of California Cooperative Extension. *Our mission is to extend research based knowledge on home horticulture, pest management, and sustainable landscape practices to the residents of California and to be guided by*

[our core values](#) and [strategic initiatives](#).

For Information on becoming a [Master Gardener volunteer](#) [click here](#).



[Master Gardener Calendar](#)



# Garden Questions



## Help Desk

**Monday, Wednesday, Friday 9 am - 12 pm**

Master Gardeners available to answer your home gardening questions. *We encourage you to bring your questions or plant samples!*

**Drop-in:**

*UC Cooperative Extension-Napa County  
1710 Soscol Avenue, Ste 4*

**By phone:**

*707-253-4143  
877-279-3065 (Toll free for AmCan & Up Valley)*

**Please Complete Our Help Desk:**  
[diagnosis form](#)



## UC Integrated Grape Team



Submit your [Vineyard Questions](#) for symposium diagnosis or the latest viticulture information.

You can also [subscribe](#) to the newsletter, *The Hobby Vineyardist* to see upcoming educational events.

## Find Master Gardeners Around Town

**Mobile Help Desk**

March - May  
Visit the Master Gardeners at local garden retailers to answer your home gardening questions.

**Farmers Markets**

May - October  
American Canyon, Calistoga and Napa  
Stop by the Master Gardener information booth.

## Gardening Resources

Find a Wealth of Garden Books and other Resources



# Q & A



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# GROWING TASTY TOMATOES

Saturday, April 6, 2019

9:30 - 11:30 a.m.

UCCE Meeting Rm

## TOMATO PLANT SALE

LOCALLY  
GROWN



25+  
VARIETIES

1710 Soscol Ave. • 9AM 'til Sold Out

Next to Central Valley Hardware

**Saturday, April 13<sup>th</sup>**

[napamg.ucanr.edu](http://napamg.ucanr.edu)



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# Help Us Grow!

Our follow-up survey provides us the tools we need to grow and improve the quality of our program.



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Thanks!

Be sure to complete the evaluations before leaving