



UC Master Gardener Program

University of California Cooperative Extension
Napa County

**Welcome to Spring and Summer
Vegetables**

March 12, 2023



UC Master Gardeners of Napa County

<http://napamg.ucanr.edu/>

Our mission: "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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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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Today's MG Team

Helen Dake

Pat Hitchcock

Heather Dooley



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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.
- Have your garden located where it is as convenient as possible.



Location, location

Level Ground

Close to Home/Kitchen

Adequate Light - 6-8 hours of
sunlight

Good Soil

Water Supply



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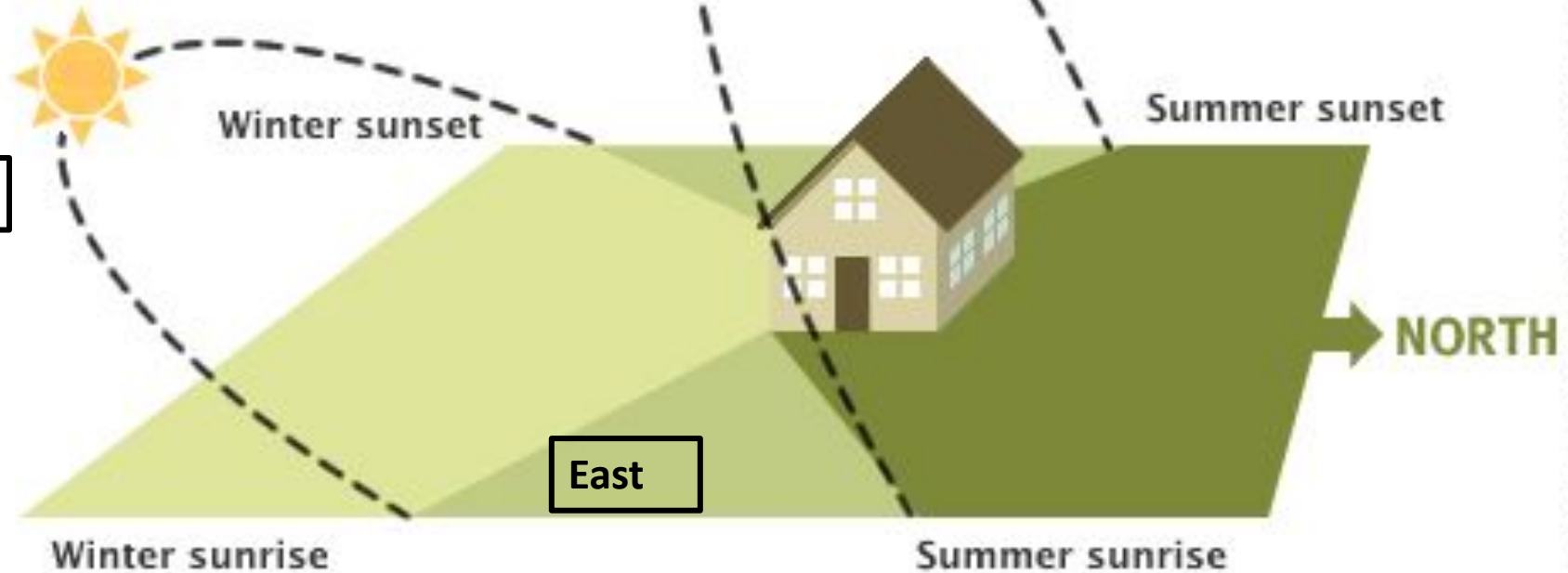
SUNLIGHT 6-8 Hours Daily

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

South



Winter sunrise

Summer sunrise

NORTH



Plants grow well in soil that ...

Has a healthy
physical structure

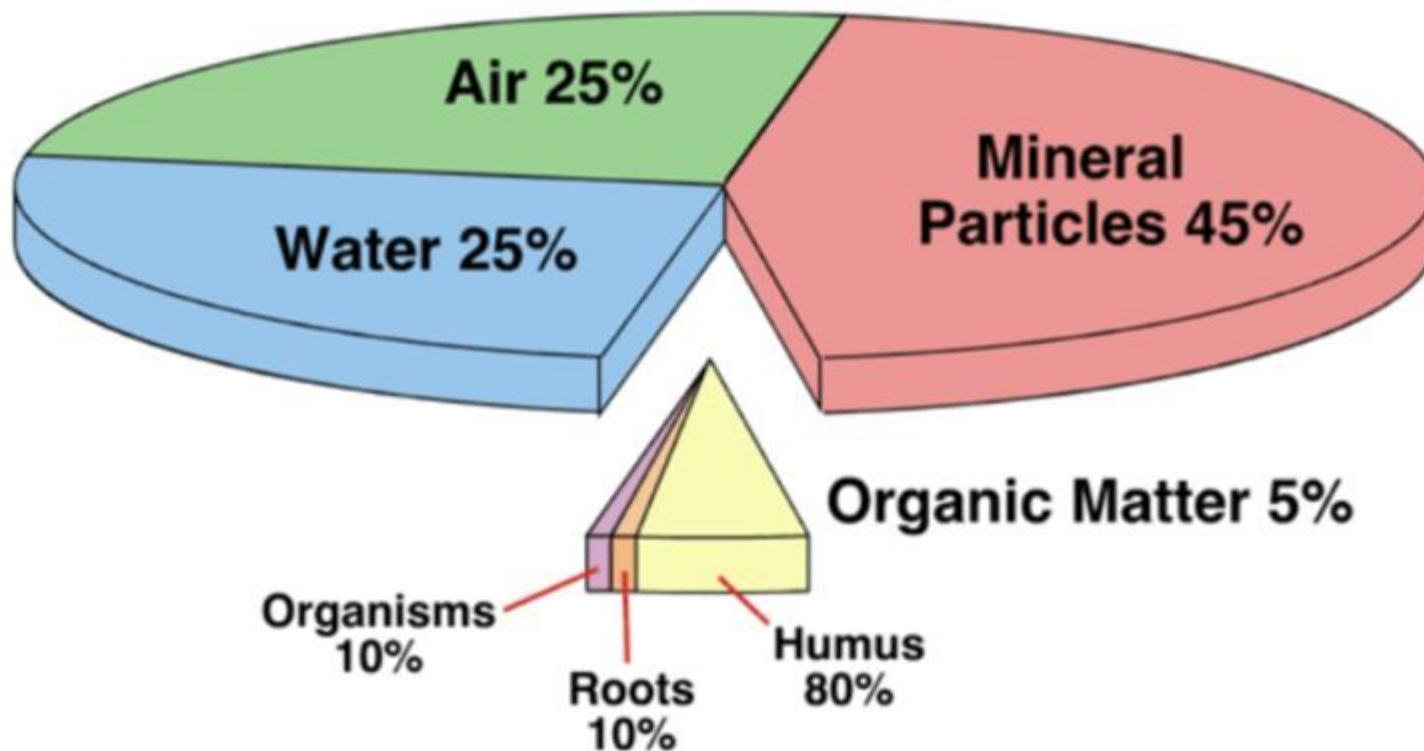
Contains essential
nutrients



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What is Soil?



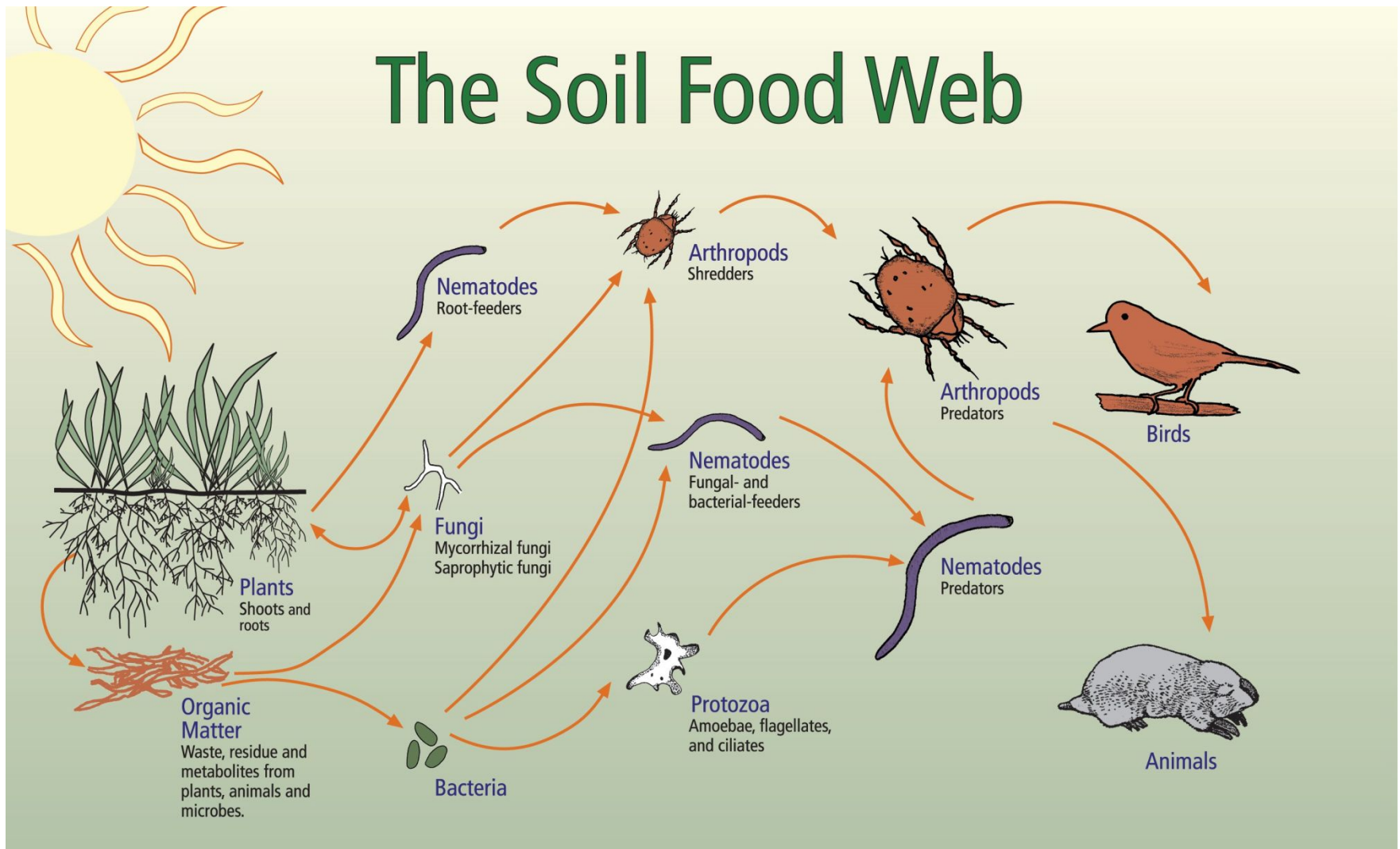
Soil structure

“Plant growth is strongly influenced by soil structure because structure affects water movement, moisture availability to plants, fertility, aeration, porosity, heat transfer, bulk density, and mechanical resistance to root growth.”

California Master Gardener Handbook, second edition, page 45



The Soil Food Web



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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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AMENDMENTS

- **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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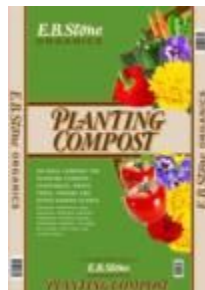
One of the best amendments is *compost*

- 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 (expensive option)



Mulch

- preserves moisture, reduces weeds, prevents erosion, also can slowly add some micronutrients.
- Is usually organic (leaves, grass clippings, compost, straw, etc.) but can be inorganic (e.g. plastic or rocks).
- One of the best mulches is compost.



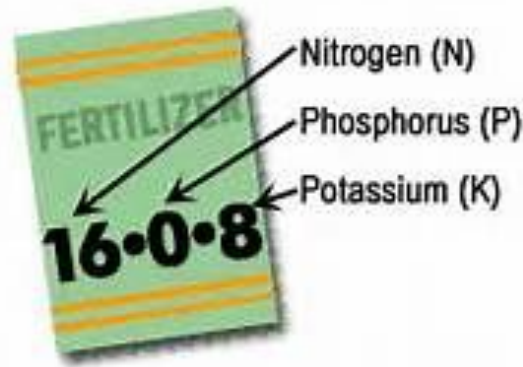
Fertilizer

We add nutrients to our soil by using fertilizer.

Amendments on their own, even compost, are not enough.



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



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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.



When Can I Start Planting



It depends!



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Cool VS Warm Season Vegetables

Cool season vegetables grow best when day time temps are 55° to 75° and usually tolerate some frost.

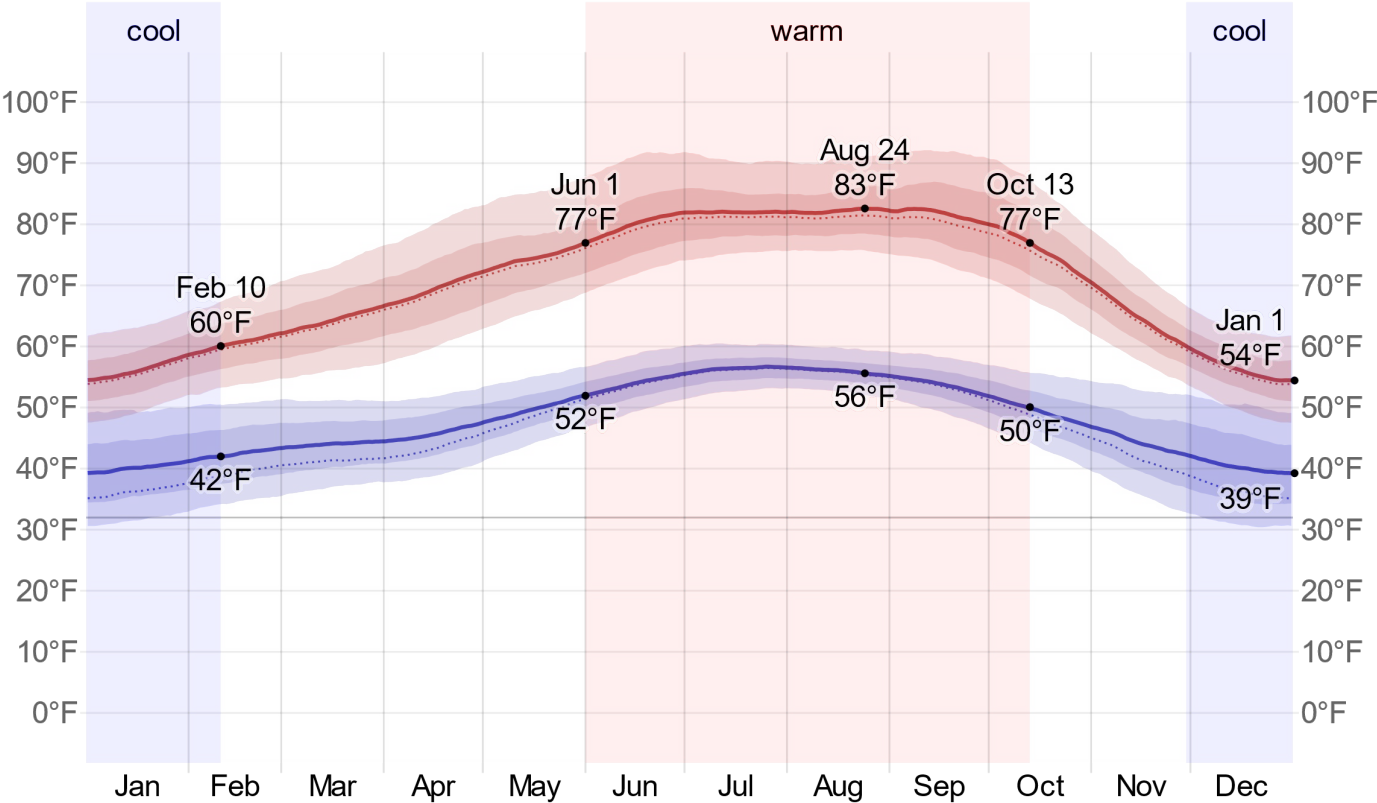
Warm season vegetables grow best in warm soil (50° or higher) and day time temps 65° to 95°.



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Cool or Warm



<https://weatherspark.com/y/615/Average-Weather-in-Napa-California-United-States-Year-Round>

Is it cool or warm season?



TRANSPLANT TO HARVEST Approx. 62 days	DAYS TO GERMINATE 7 - 10 days	SOW SEEDS 1/2 inch deep	SUN/SHADE Full sun	MILD WINTERS Mar-April, July-Aug
		COLD WINTERS May-June	To Start Outdoors Sow seeds in well-worked, fertile soil in full sun. Plant groups of 2 to 3 seeds 1/2 inch deep and 12 inches apart. Space rows 18 inches apart. Thin to 1 strong seedling per group so plants have room to mature and grow.	
	Best to Start Indoors Start seeds 4 or 5 weeks before last expected spring frost and again in midsummer for a fall crop. Sow seeds 1 inch apart in a container of seed starting mix, cover 1/2 inch deep and keep evenly moist. Provide a strong light source until seedlings are ready to plant out. When seedlings are 3 to 4 inches tall, gradually acclimate to outdoor conditions, then transplant 12 to 18 inches apart into rich, well-drained soil in full sun.	Growing Notes Broccoli needs rich, fertile soil and cool growing weather to produce big heads. Prepare soil well and do not let seedlings get too crowded before transplanting or the heads will be stunted. Keep well watered and weeded. Feed at least monthly with all purpose fertilizer. Use non-toxic B.T. (<i>Bacillus thuringiensis</i>) products to repel caterpillar pests as necessary.		
	Harvest and Use Harvest the main head before florets open by cutting about halfway down the stalk. This will encourage numerous side shoots to form for extended picking from each plant.			

6060 Graham Hill Road, Felton, CA 95018
 888-880-7228 • reneesgarden.com

Certified Organic by CO Dept. of Ag
 Net Wt. 300 MG Packed for 2021 - Sell by 12/21
 Canada # 1 LOTA \$3.99 US/ \$4.75 CAN



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Is it cool or warm season?

Pole Beans

Red Noodle
Yard Long

90 days. This standout plant is heat-tolerant and robust, producing astounding garnet-colored, 18 inch long bean pods. Sweet and stringless. 1 oz

\$4.35



Territorial
SEED COMPANY

BN048/S
RED NOODLE
Sampler

Packed for 2014

8 48672 00144 0

Seed Depth	Seed Spacing	Soil Temp for Germ.	Days to Germination	Thin Plants to
1"	2-4"	65-85°F	8-16	Not Required

Sowing Indoors-Not recommended.

Sowing Outdoors-Direct sow in warm soils (+60°F) for uniform, rapid emergence. Do not soak seed prior to sowing. Beans are a favorite of birds, so discourage them with flash tape or row crop covers. Coat seeds with inoculant to promote healthy, vigorous plants.

Growing Tips-Most pole beans are grown on trellises. To trellis pole beans, stretch 2 wires between 2 stout posts (1 wire 10 inches high, the other 6-8 feet high.) Using rough string, zigzag between wires creating V shaped trellising.

Fertilization Tips-Apply 1 cup of our complete fertilizer per 10 row feet to provide the nutrition necessary for optimum production. Excess nitrogen causes poor pod set and delayed maturity.

Disease Prevention Tips-Beans are subject to numerous diseases. Careful watering that avoids wetting the foliage, along with complete removal of dead plants at the end of the season, will help avoid problems.

Seed Specs-Min. germ. standard: 80%. Usual seed life: 2-3 years.

Please read our seed guarantee before opening this envelope.

PO Box 158, Cottage Grove, OR 97424
Phone Orders: 800-626-0866
Web: www.TerritorialSeed.com



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Is it cool or warm season?



#3009 See photo at www.reneegarden.com 7 60050137197 9

Starica F1 Nantes Carrots

PLANT IN March - June July - August	LOCATION Full sun	PLANTING DEPTH 1/4 inch	SPACE SEEDS 1/2 inch	DAYS TO GERMINATE 10 - 20 days	DAYS TO HARVEST Approx. 70
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START SEEDS OUTDOORS
In spring once danger of hard frost is past, sow seeds in full sun in finely worked, fertile soil. Sow 1/4 inch deep and 1/2 inch apart in rows 8 inches apart, or broadcast thinly in beds and cover lightly. Keep seedbed evenly moist as carrots can be slow to germinate, emerging over 10 to 20 days. If first sowing comes up unevenly, replant right away as seedlings catch up quickly. Be sure to thin young carrots several times so seedlings are about 2 inches apart and have room to size up.

GROWING NOTES
Carrots like well worked soil and need consistent moisture to grow well. If your soil tends to dry out, cover seedbed with floating row cover to help retain moisture during the germination period and water right through it. Keep carrots well watered and thinned. For a late season crop, sow again 3 months before first expected frost.

HARVEST AND USE
Let young carrots size up and color fully to orange before harvesting for best flavor. Saute or steam just until tender crisp and serve with a squeeze of fresh lemon or lime juice, sweet butter and fresh dill; or try buttered and glazed with a little maple syrup or honey.

6060 Graham Hill Road, Felton, CA 95018
888-880-7228 • www.reneegarden.com

Renee's Garden

No GMOs Lot B \$3.79 US / \$4.15 CAN
Net Wt. 1.25 gm Packed for 2017 - Sell by 12/17
Certified Organic by CO Dept. of Ag Canada No. 2



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Is it cool or warm season?

Pepper
Organic
Pizza Pepper
Low Heat

80 days. The heaviest, most thick-walled pepper we have ever seen, for big wedges with just a hint of zing. The 3-4 inch cone-shaped peppers on 14-18 inch tall plants are most flavorful when green. Early and prolific.

1/4 gram \$4.45



TERRITORIAL
SEED COMPANY
Certified Organic by CCOF

PP685/L
Pizza Pepper
Sampler

Packed for 2020

8 48672 04267 2

Seed Depth	Seed Spacing	Soil Temp for Germ.	Days to Germination	Thin Plants to
1/4"	See Below	70-90° F	8-25	12-18"

Sowing Indoors-Start seeds 8-10 weeks before anticipated transplant date. Use a sterile seedling mix and keep uniformly moist. Germination may be slow and erratic. Provide the seedlings with plenty of light to produce strong, high-yielding, mature plants. Use a heat mat to achieve the optimum soil temperature.

Sowing Outdoors-Not recommended.

Growing Tips-The number of early flowers can be increased by giving the plants a cold treatment before transplanting outside. This is done by exposing transplants to temperatures of 55° F during the night and 70° F in the day. Cold treatment should occur only after there are 3 sets of true leaves. Transplant out when soil temperature has warmed to 65° F.

Fertilization Tips-High phosphorous soil amendments such as bone meal will help get the plants off to a fast start. Apply 1/2 cup of our complete fertilizer around each plant to provide the nutrition necessary for optimum production.

Seed Specs-Min. germ. standard: 70%. Usual seed life: 2 years.

*2021 germination good
2021 " " = good 7/7*

Please read our seed guarantee before opening this envelope.

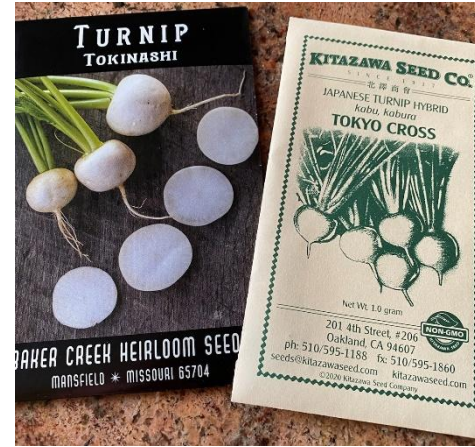
PO Box 158, Cottage Grove, OR 97424
Phone Orders: 800-626-0866
Web: www.TerritorialSeed.com



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Quick-Growing Cool Season Vegetables



Other Great Crops to Plant Now



Summer Crops to Plant in May



Summer gardens will need watering



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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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When to Water

Test: Water if dry at 3-4 inches



Best time of day is early morning or in evening.

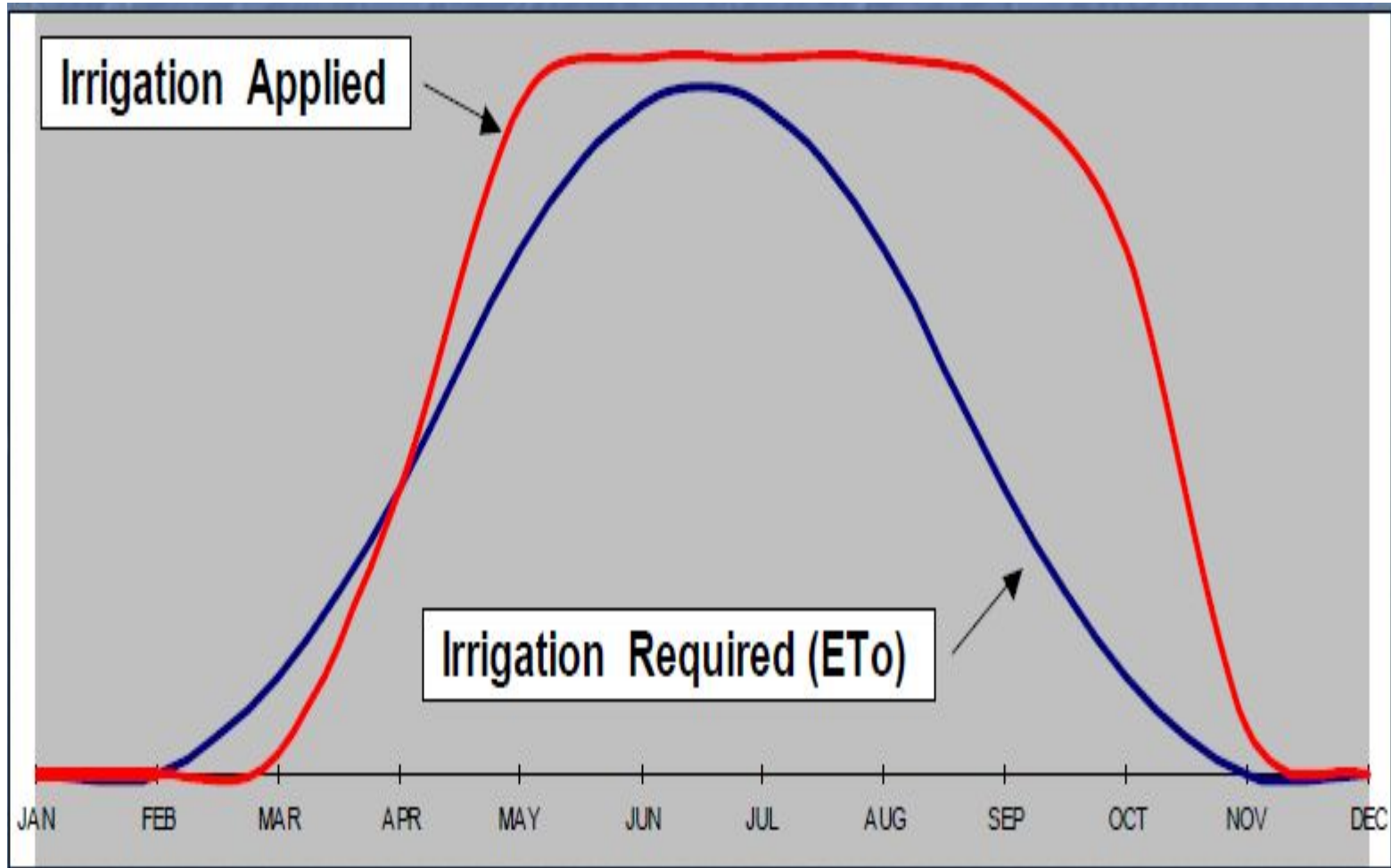
NOTE: Drooping leaves do NOT always mean the need for watering. Check the soil. Avoid overwatering. Roots can drown.



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RELATIVE WATER NEEDS BY TIME OF YEAR



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What are
you
growing?



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Critical Periods for Adequate Watering:

Beans and peas	Flowering/forming pods
Broccoli, cauliflower	Forming heads
Corn	Silking, tasseling, forming ears
Cucumber	Flowering; fruit forming
Eggplant, peppers, tomato	Flowering through harvest
Melon	Fruit set & early development
Pumpkin	Fruit forms
Squash	Bud forming & flowering
Swiss Chard	When true leaves form
Lettuce	When true leaves form



Ways to Water

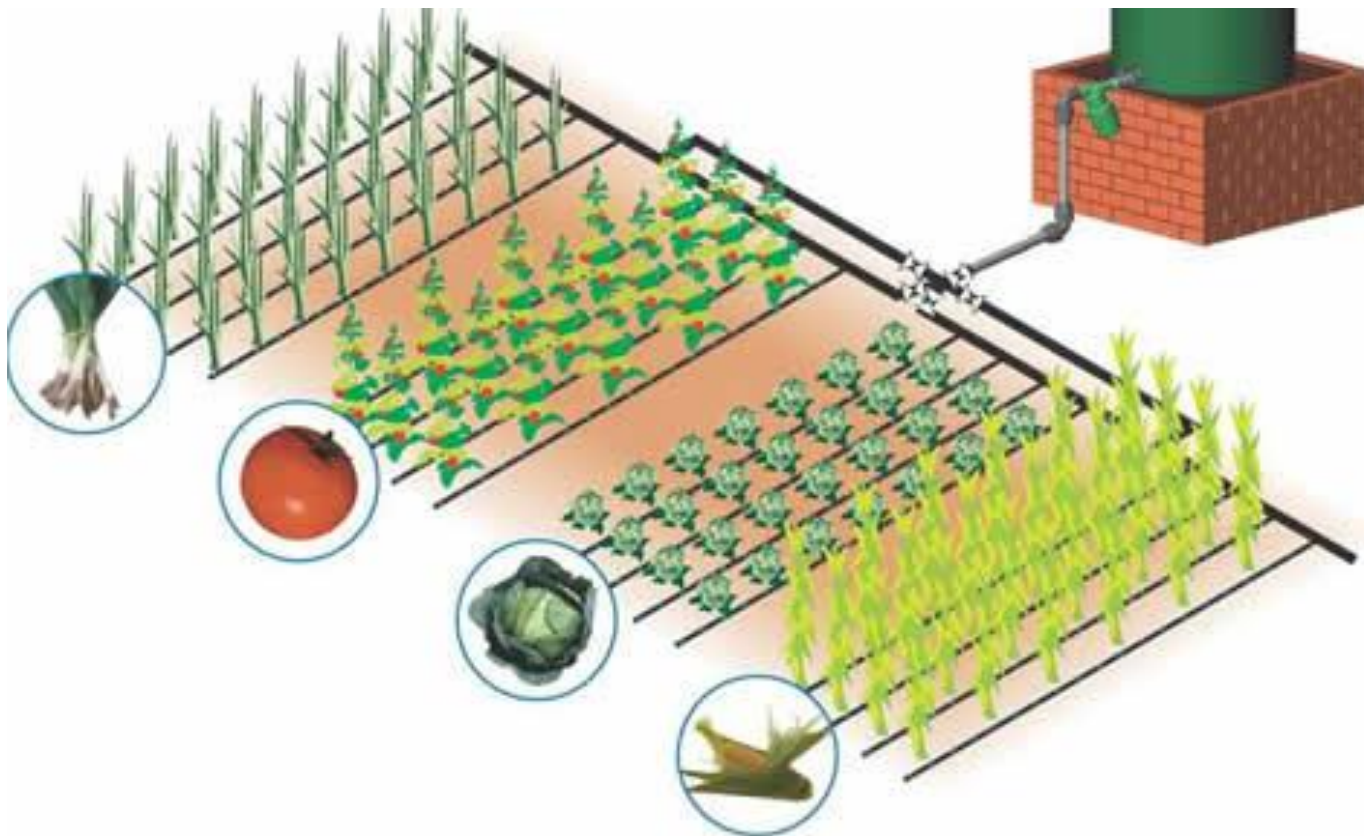
- Flooding
- Sprinklers
- Hand watering with hose
- Drip



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Why is Drip Irrigation best?



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Hands-on Centers

- Start basil seeds to transplant later.
- Transplant or “up-pot” fast growing cool season seedlings.



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Integrated Pest Management



- Detect
- Identify
- Monitor



Components of an IPM Program

- Prevention
- Pest & symptom identification
- Regular surveying for pests
- Action thresholds and guidelines
- Sound management methods
- Cultural, mechanical, biological and chemical

IPM: Cultural methods

NO: Overfertilization
Overcrowding
Overwintering pests
Monoculture

YES: Correct watering
Strong plants
Correct planting time



Brassicas: Broccoli, Cauliflower, Cabbage, Kohlrabi, Kale





Pests of Broccoli, Cauliflower, Cabbage



- Handpick eggs, loopers
- Exclude with row cover
- Spray Bt



Imported Cabbage butterfly
4-5 week life cycle



Cabbage moth & looper



Biological control of caterpillars

Bt: *Bacillus thuringiensis ssp kurstaki*





Leaf crops: Lettuce, Chard, Spinach, Greens, Parsley



- Direct seed or transplant in Mar
- Also Asian greens
- Continual harvest thru cool season



Pests of lettuce, spinach, chard

- Wash off aphids
- Encourage beneficial insects
- Hand squish eggs of leaf miner



Leafminer



Snails and slugs



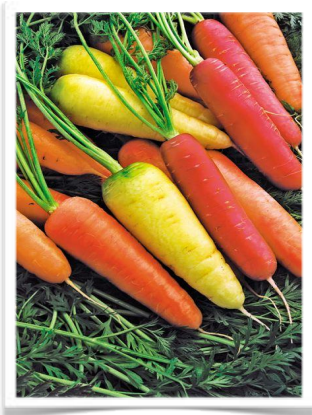
Aphids on chard



Parasitized aphids



Root crops: carrots, turnips, radish, beets



- Direct seed carrots, radish, turnip
- Can transplant beets
- Carrots, beets can overwinter





Legumes:

Peas



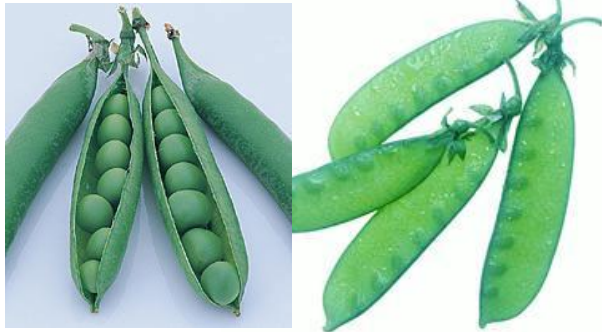
Tillage radish



Fava beans



- Direct seed peas in early Sept, harvest by December
- Birds like new shoots, protect
- Pea tendrils need support



Tomatoes



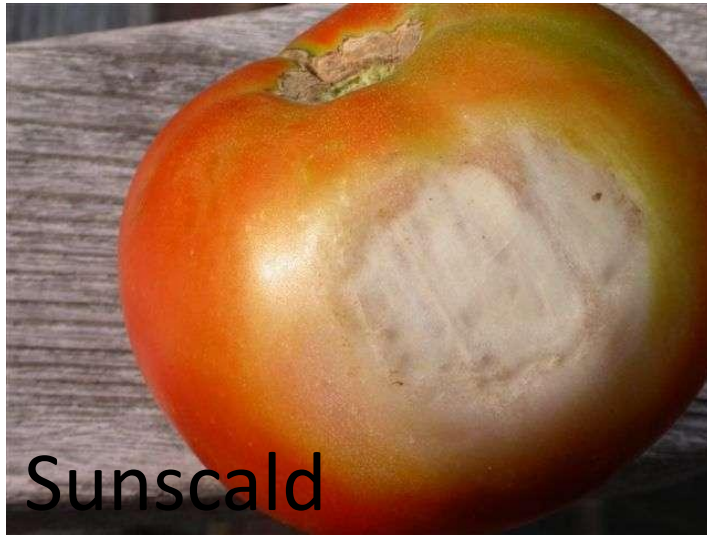
Verticillium and fusarium wilts



Determinate vs indeterminate



Physiological conditions of tomatoes



Peppers



Sunscald



© 2007 University of Massachusetts Amherst

Eggplant



Flea beetle damage



Green beans, bush and pole



Mite damage to bean leaves



Cucumbers



Cucumber beetle (spotted)



Summer squash



Squash blossoms



Powdery mildew



IPM: Cultural methods

NO: Overfertilization
Overcrowding
Overwintering pests
Monoculture

YES: Correct watering
Strong plants
Correct planting time



Questions?

Links to planting calendars

Summer/fall and winter/spring vegetable planting guide for Napa County:

<https://ucanr.edu/sites/ucmgnapa/files/153875.pdf>

Month by month planting guide for annual vegetables in Napa County:

<https://ucanr.edu/sites/ucmgnapa/files/218030.pdf>



Thanks!
Be sure to complete
the evaluations
before leaving



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