Tomatoes!!

Queen of the Summer Garden

photo: https://www.ydr.com/story/life/2018/06/14/gardening-how-grow-tomatoes-home-planting-watering-fertilizer-pests-fruit/697591002/

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The Basics

Determinate/Indeterminate

- aka D or DET
- "bush" type tomatoes (3-5 ft.)
- bears all within 4-6 weeks
- declines after fruiting
- great for canning and freezing

photo: www.texas-heirloom-tomatoes.com/tomatoes-for-container-gardening.html

- aka I or IND
- tall plants, continuous growing vines
- requires support
- sets continuous fruit
- great for season long tomatoes

photo: https://catalog.extension.oregonstate.edu/ed1333/html

The Basics

Hybrid/Heirloom

- bred for specific traits
- often disease resistant*
- uniform
- good flavor
- seeds do not breed true

- open pollinated
- stable over time (7-9+ years)
- excellent to exquisite flavor
- seeds breed true
- not generally disease resistant

Tomato Disease Resistance Codes

V - Verticillium Wilt
F - Fusarium Wilt (FF - Races 1 & 2; FFF - Races 1, 2, & 3)
N - Nematodes
T - Tobacco Mosaic Virus
A - Alternaria Stem Canker
St - Stemphylium Gray Leaf Spot
TSWV - Tomato Spotted Wilt Virus

www.tomatodirt.com/disease-resistance-codes.html

*Disease resistant varieties does not mean immunity.

The Basics

Early, Mid-Season, Late

Based on "Days to Maturity"

Under 70 days

Early Girl
Sweet 100
Stupice
Sungold
New Girl

70 - 80 days

Lemon Boy
Green Zebra
Better Boy
Mr. Stripey

over 80 days

Cherokee Purple
Marvel Stripe
Mortgage Lifter
Kellogg Breakfast
Paul Robeson

photos: https://bonnieplants.com/choose-your-tomato/

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The Basics

Classes of Tomatoes

- Beefsteak – large and late: Brandywine, Cherokee Purple, Kellogg Breakfast
- Slicers – medium-large and round: Better Boy, Sweet Tangerine, Lemon Boy
- Oxheart – oblong and meaty: Hungarian Heart, Perfect Red Heart, Lemon Oxheart
- Saladette – 4-6 oz and perfect for salads: Green Zebra, Stupice, Black Prince
- Roma/paste – denser and fewer seeds: Roma, San Marzano, Orange Roma
- Cherry/Grape/Pear – small and productive: Sweet 100, Sungold, Yellow Pear

photos: https://theolivescene.com/recipes/2015/6/28/cherry-tomato-medley-salad (bottom) and https://blog.goodeggs.com/blog/all-about-tomato-varieties

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Planting: Site Selection

Tomatoes love warmth.

- Find the warmest most protected spot in your yard, 6-8 hours full sun.
- Consider a wall or fence to reflect light and/or heat.
- Wind blocks help: behind a hedge, shed, fence, or your neighbors house.
- Avoid low spots that are colder.

Tomatoes love rich, well drained soil, but will do well in average garden soil.

Rotate tomatoes each year; they are heavy feeders and disease prone.

https://spaceplace.nasa.gov/sunburn/en/

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Planting: Site Selection

Container Planting

https://desgarden.com

Consider containers:

- Advantages: good soil and drainage, warms up quickly, mobile
- Disadvantages: more fertilizer, more water, and can heat up too much

Container Planting:

- large pot, minimum 15 gallons
- top soil with compost or potting soil with organic fertilizer higher in phosphorus than nitrogen, eg: 4-5-3. Worm castings can add micro=nutrients.
- mulch well, minimum 3"

Plant selection:

- small is better: dwarf, patio, pixie
- eg: Tiny Tim, Toy Boy, Small Fry, Red Robin, Sugar Sweetie, Black Sea Man

Care:

- Be alert to increased water need; soak root ball each time
- Liquid fertilizer every 10-14 days, eg: diluted 2-3-1
- In extreme heat, may need to wrap black containers

photo: www.wilsonbrothersgardens.com

Planting: When to Plant

- Santa Barbara County spans USDA zones

  zone 9B (lows 25-30°) Lompoc, Santa Ynez, Santa Maria, average last frost date February 28

  zone 10A (lows 30-35°) Santa Barbara, Goleta, Carpinteria, average last frost date January 30

- UCANR divides California into 3 climate zones. Most of southern SB County falls in zone A; northern SB County is at the edge of zone C. Based on this, UCANR **recommends transplanting tomatoes between April 1 and mid-July.**

- Sunset Western Garden Guide has a more nuanced climate zone guide. SB County falls in zones 23-24.

- Be mindful of your individual micro-climates.

photo: http://planthardiness.ars.usda.gov/PHZMWeb/

Planting: How to Plant

Start from Seeds:

- Start seeds 6-8 weeks before planting
- Fertilize every 2 weeks with liquid fertilizer
- Harden off seedling 2 weeks before planting

photo: www.blueeggfarmllc.com

Transplants:

- Compact plant 6-8 inches tall
- Sturdy stem
- Avoid leggy plants with flowers or few leaves

Planting:

- 3 feet apart
- dig hole deep, apply generous amount of compost
- plant tomato deep to plant ½ plant above and ½ below soil; remove lower leaves (can plant horizontally)
- press soil firmly, add balanced fertilizer, and water in
- mulch - 4 inches

Optionally: Plant tomatoes successively (or varieties with differing maturity dates).

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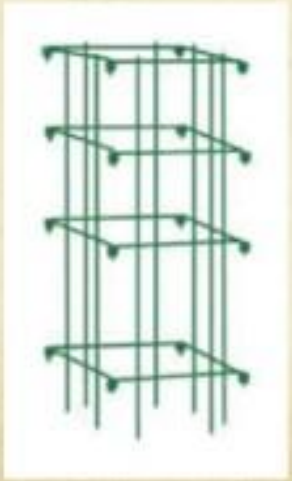
Care of Growing Plants

Beating the season:

- cover with plastic, floating row cover, or row tunnel
- cover with cloche or hot cap

Support your tomatoes:

- use stakes, tomato cages, trellises, or wire cages, essential for indeterminate varieties
- determinate tomatoes need less support
- Don't support too early or too tight.



photos: www.mickelson.org

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Care of Growing Plants

Watering:

- regular, deep watering. Depending on weather and soil watering frequency may vary from 2-3 times/week to once every 10-14 days.
- soak root ball each time
- use soaker hose or drip irrigation
- keep foliage dry; remove lower leaves to keep off soil
- water early in the day
- reduce water when fruit begins to ripen to enhance flavor

photo: www.ehow.com

Fertilizing:

- at planting, side dress with balanced fertilizer
- at fruit set, side dress with balanced or tomato formulated fertilizer*
- for late season tomatoes (90+days eg: Beefsteak) apply a third application.
- micro-nutrients can be added by side dressings of compost, worm castings, or worm tea drench can be used periodically, as well as foliar feedings of kelp or worm tea.
- any manures used must be well decomposed, especially chicken manure.

*Sunset Western Garden Guide recommends fertilizing every 2 weeks from fruit set to last harvest.

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Care of Growing Plants

To pinch or not to pinch??

Definition: Pinching means removing suckers that form at the crotch joint of two branches. These side branches, or suckers, will grow flowers and fruit.

Advantages:

- more air flow to help prevent fungal diseases
- controls size of plant
- in coastal areas, more sun into to interior of plant
- often larger (if less) fruit; begins fruiting earlier

Disadvantages:

- high maintenance; must pinch weekly*
- often less total fruit production
- higher susceptibility to sunscald

http://www.linnacresfarm.com/2014/06/pruning-tomato-plant-suckers.html

*Determinate tomatoes generally do not need pinching.

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Troubles with Tomatoes

Three Areas of Concern

Environmental/Cultural	Diseases	Common Pests
dampening off	A – Alternate Stem Canker	aphids
blossom end rot	F – Fusarium Wilt	white flies
fruit crack	TMV – Tobacco Mosaic Virus	N – Nemetodes
flower drop/fruit set	V – Verticillium Wilt	horned worm
sunscald	S – Stemphylium Grayleaf Spot	thrips
leaf roll	early blight	russet mite
catface	late blight	cut worms
solar yellowing	powdery mildew	leaf miners

Don't dispair, there are actions you can take....

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Trouble with Tomatoes

An ounce of prevention is worth a pound of cure....

Good Cultural and Sanitation Practices:

- plant varieties recommended for your area; plant disease resistant varieties
- inspect new plants coming into the garden
- rotate planting site each year
- do not plant with other nightshades (potato, eggplant, pepper)
- wide spacing between plants
- regular, thorough water in the morning; no overhead watering
- mulch; holds moisture and keeps leaves off the soil
- prune lower leaves: airflow/away from soil
- remove fallen plant materials
- sanitize tools and garden equipment including stakes and cages with 10% bleach solution

photo: https://www.youtube.com/watch?v=NAtaxLBWwmQ

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Trouble with Tomatoes: Environmental/Cultural

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dampening off		• consistent water • well draining soil • good sanitation • rotate planting site
blossom end rot		• maintain even soil moisture • amend with compost • adding calcium (gypsum) may help
fruit crack		• even moisture especially during and after dry period • mulch • full canopy
flower drop/fruit set		• temps >90° or <55° • hormone spray during low temps • avoid excess nitrogen fertilizer • early blossoms-not reliable • tap blossom stems midday to aid in pollination

photos: ncmg.ucanr.org/files/180088.pdf or ipm.ucanr.edu/PMG/GARDEN/VEGES/tomato.html

Trouble with Tomatoes: Environmental/Cultural

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sunscald		**• maintain plant vigor to create full canopy** **• avoid over-pruning** **• provide shade**
leaf roll		• unknown cause • determinant varieties are less susceptible • maintain even moisture
catface		• even soil moisture • mulch 3-4” • plant less susceptible varieties
solar yellowing		• can occur with heat over 85°

all photos: ncmg.ucanr.org/files/180088.pdf or ipm.ucanr.edu/PMG/GARDEN/VEGES/tomato.html

Trouble with Tomatoes: Common Diseases

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Fusarium Wilt • soil fungus • vascular wilt • usually begins at flowering • leaf yellow begins lower part of plant on one side and moves upward and out • leaves wilt and die • favors warm conditions		• grow resistant varieties • site rotation • good sanitation practices • avoid crowding • avoid overhead watering • cut lower leaves • soil solarization
Verticilium Wilt • soil fungus • vascular wilt • usually begins at flowering • leaf yellow begins lower part of plant and moves upward • leaves wilt and die • favors cool conditions		• grow resistant varieties • site rotation • good sanitation practices • avoid crowding • avoid overhead watering • cut lower leaves • soil solarization
Early Blight • Alternaria leaf or target spot • warm, wet weather • dark concentric rings on leaves • progresses rapidly after fruit set		• site rotation • good sanitation practices • avoid crowding • pick off infected leaves • copper fungicide at first sign and every 7-10 days after

all photos: ncmg.ucanr.org/files/180088.pdf or ipm.ucanr.edu/PMG/GARDEN/VEGES/tomato.html

Trouble with Tomatoes: Common Diseases

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Late Blight **fungus** **favors high humidity and low temp, mid-late August** **gray fungus grows underside of leaves** **fruit turns brown but firm** **can kill plant rapidly**		• site rotation • good sanitation practices • avoid crowding • **mulch**
Tobacco Mosaic Virus • leaves irregular yellow and dark green color pattern, wrinkled or frilly • terminal growth spindly • no cure for virus		• grow resistant varieties
Powdery Mildew fungus occurs with humidity and warmth white patches on leaf upper surface		• good sanitation practices • avoid crowding • avoid overhead watering • fungicide may be used at first appearance (eg: Serenade, Neem Oil, Bi-Carb)

all photos: ncmg.ucanr.org/files/180088.pdf or ipm.ucanr.edu/PMG/GARDEN/VEGES/tomato.html

Trouble with Tomatoes: Common Worms

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cutworms • eats young plants at soil line		• **eliminate weeds** • **cardboard collars** • **hand pick**
tomato horned worm • eats leaves, small stems, and fruit		• hand pick early evening • praying mantis • Bacillus thuringiensis (BT) or spinosad spray
nematodes (root knot) • attacks feeder roots • causes swelling (galls) on roots • plant failure to thrive		• grow resistant varieties • site rotation!! • soil solarization

all photos: ncmg.ucanr.org/files/180088.pdf or ipm.ucanr.edu/PMG/GARDEN/VEGES/tomato.html

Trouble with Tomatoes: Common Insect Pests

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aphids
- new leaf curling
- new shoots coated with insect
- visible on undersides of leaves

- hand squash
- blast with water
- insecticidal soap

white flies
- tiny white winged insect
- underside of leaves

- remove affected leaves
- sticky tape
- insecticidal soap or oil

tomato russet mite
- not visible to naked eye
- stem with bronze, oily brown color
- bronzing on lower leaves
- dry lower leaves drop from plant

- avoid growing near petunias or potatoes
- Neem oil or sulfur dust or wettable sulfur

all photos: ncmg.ucanr.org/files/180088.pdf or ipm.ucanr.edu/PMG/GARDEN/VEGES/tomato.html

Harvest

www.nytimes.com/2012/05/31/science/the-tomato-ripe-juicy-and-bursting-with-genes.html

- Pick ripe! "Red is not ripe until it's redder."
- Green varieties blush chartreuse or yellowish when ripe.
- Firm fruit is not ripe fruit.
- Harvest and eat within three days.

Nutritional Value of Tomato

		Primary Nutrients		%RDA(m)	%RDA(f)
Serving size:	1 (about 4 oz.), raw	Vitamin C	24 mg	40	40
Calories	26	Folic acid	18 mcg	9	10
Fat	0.4g	Vitamin A	77 RE	7.7	9.6
Calories from fat	14%	Iron	0.55mg	5.5	3.7
Cholesterol	0				
Sodium	11 mg				
Protein	1.0 g				
Carbohydrate	5.7 g			% Min Requirement	
Dietary fiber	1.6 g	Potassium	273 mg	13.7	

www.heirloomtomatoplants.com/The%20Green%20Tomatoes.htm

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Storage

https://purplefoodie.com/oven-dried-tomatoes/

- Store at room temperature
- Refrigeration causes loss of flavor
- Tomatoes are excellent for canning, drying and freezing.

www.daringgourmet.com/how-to-can-diced-tomatoes/

https://mamaldiane.com/freezing-fresh-tomatoes

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Bottom Line: Growing Tomatoes

- Choose plants for your area
- Find a good planting site
- Don't crowd

www.havahart.com/articles/surplus-tomatoes-garden

- Create consistent watering and fertilizing schedules
- Follow good sanitation practices

https://awaytogarden.com/dreaming-of-the-perfect-bamboo-leaf-rake/

www.victoriannursery.co.uk/Tomato_Seed_Blizzard/

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Bottom Line: Choosing Tomatoes

Choose based on:

- climate zone/micro-climate
- space
- disease resistance
- days to maturity
- goal
- taste
- fun!

photo: https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=26839

Tomato Lovers' Favorites

Container	Coastal	Hybrid	Heirloom	Cherry
Black Sea Man -D	Jaune Flamme -I	Better Boy - I	Cherokee Purple -I	Sweet 100 -I
Tumbling Tom Yellow -D	Carmelo-I	Lemon Boy - I	Brandywine -I	Sungold -I
Patio F1 Hybrid -D	Persimmon -I	Champion - I	Mortgage Lifter -I	Black Cherry -I
Sweet Baby Girl -I	Stupice -I	Celebrity - D	Black Krim -I	Juliet Grape -I
Better Boy Bush- D	New Girl-I	Early Girl - I	Paul Robeson -I	Yellow Pear -I

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