



WSU EXTENSION  
**Cowlitz County**

# How to Grow a Red Tomato in the PNW

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WSU Cowlitz County Extension  
Master Gardener Program





# Mission

Engaging university-trained volunteers to empower and sustain diverse communities with relevant, unbiased, research-based horticulture and environmental stewardship education.





## Our Program Priorities

 CLIMATE CHANGE	<b>Climate Change:</b> We teach ways to create resilient landscapes that are adapted to our changing climate.	 SOIL HEALTH	<b>Soil Health:</b> We encourage building healthy soils to prevent depletion and ensure the long-term viability of local food security & natural resources.	 PLANT BIODIVERSITY	<b>Plant Biodiversity:</b> We promote stewardship of diverse ecosystems through invasive species management, native species conservation and restoration in landscapes.
 CLEAN WATER	<b>Clean Water:</b> We promote integrated pest management to minimize polluted runoff.	 POLLINATORS	<b>Pollinators:</b> We teach ways to help native bees and other pollinators thrive in home and community landscapes.	 NEARBY NATURE	<b>Nearby Nature:</b> We seek to increase access to plants, green spaces, and public landscapes to benefit the health & well-being of all members of our communities.
 WATER CONSERVATION	<b>Water Conservation:</b> We promote water-wise gardening and landscaping practices to conserve water.	 LOCAL FOOD	<b>Local Food:</b> We promote sustainable techniques to growing local food to improve individual & community health and wellness.	 WILDFIRE PREPAREDNESS	<b>Wildfire Preparedness:</b> We teach landscaping principles to reduce the risk of loss due to wildfire.

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Visit our website--Gardening workshop videos and resources

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HAVE A GARDENING PROBLEM? ASK A MASTER GARDENER!



VEGETABLE GARDENING



FRUITS



LANDSCAPE GARDENING



MONTH-BY-MONTH GARDEN TIPS



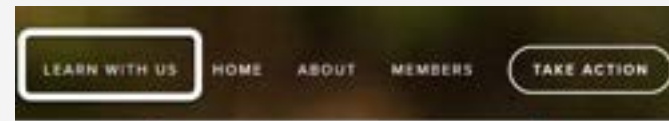
LAWNS/TURF/PASTURE TIPS



COMPOSTING



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Free Community Resource

Plant and Insect Clinic

Phone: 360-577-3014 Ext. 1

Office: 304 Cowlitz Way, Kelso WA 98625

Email: [cowlitzmastergardener@gmail.com](mailto:cowlitzmastergardener@gmail.com)

Interested in becoming a Master Gardener?

Sign up to be notified about workshops?

Contact Gary Fredricks

[garyf@wsu.edu](mailto:garyf@wsu.edu)



# MASTER GARDENER PLANT SALE

Saturday, May 13

8 am - 3 pm

COWLITZ CO. FAIRGROUNDS  
LONGVIEW, WA



Proceeds support:  
501(c)(3) Nonprofit

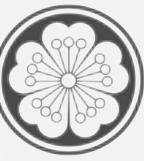


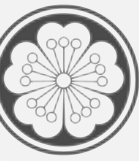
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Cowlitz County



# What a challenge!

- Summers are late to start, quick to finish
- Cold nights
- Short growing season
- Even shorter at higher elevations!
- And a new problem--extreme heat waves!





# What we'll be talking about

- Tomato choices
- How and when to get started
- Methods for getting a jumpstart on the season
- How to care for your tomatoes during the growing season
  - site selection
  - When to plant and planting
  - Plant protection--keeping them warm when it's cold
  - Soil nutrition and fertilization
  - Irrigation options
  - Pruning, support options

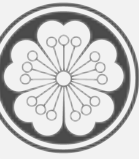
## Growing in containers

- Dealing with extreme heat
- Helping your tomatoes ripen
- Dealing with tomato diseases, disorders, and pests



# Choosing your tomato variety







## Look at the label!




- Time to maturity: Starts at the date transplanted to garden!
- Disease resistance
- Growth habit
- Determinate
  - Bush variety
  - Ripen all at once then stop
- Indeterminate
  - Tall, produce all season
  - Need support
- Use
- Flavor and texture

**BIG JOE TOMATO**  
*Solanum lycopersicum* **8**

Big Joe Tomato is a hearty beefsteak indeterminate tomato with excellent disease resistance.

<b>7</b> 	<b>9</b> 	<b>10</b> 	<b>11</b> 	<b>12</b> 	<b>13</b> 
LIGHT	ROW SPACING	PLANT SPACING	PLANTING DEPTH	DAYS TO GERMINATION	PLANT HEIGHT
Full Sun	2 ft.	12 in.	1 in.	7	5 ft.

**6**



- Plant Jun - Jul
- Plant May - Jul
- Plant Apr - Jul
- Plant Mar - Aug
- Plant Feb - Sep

**14** **Starting seeds inside:** Start seeds inside at least eight weeks before the average last frost date.  
**Transplant outside:** Transplant seedlings outside after nighttime temperatures are above 70 degrees.  
**Days to maturity:** 75

**Suggestions:** Plant tomato seedlings deep, leaving only the top two sets of leaves above the soil.

**15** **TMVSWV**



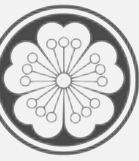
# MASTER GARDENER PLANT SALE



*Great tomatoes for higher elevations!*

TOMATO VARIETY	Days to Maturity	
Tumbler Hybrid	45	Very sweet taste and showy in a hanging basket mixed with annual flowers. *Great in hanging containers
Siberia	48	The fruits are bright red, averaging 3 to 5 oz., and bunch together in clusters of 30 or more. Great for colder climates. Good in salads and containers. 2.5 stars for taste.
Early Treat Hybrid	49	Very early tomato. Produces abundant clusters of tasty 4 oz fruit all summer long. Verticillium and Fusarium resistant.
Fourth of July Hybrid	49	Early 4 inch tomato with lots of great tasting red tomatoes all season long.
Independence Day	50	Early sweet, rich-tasting 2-3 inch tomatoes that are great in salads. Have ripe tomatoes in July!
Sub Arctic Plenty or World's Earliest	50	Rich tomato flavor *Good for large containers and for higher elevations. Consider container planting another, later fruiting tomato variety (like Marglobe) that will offer tomatoes when this plant is finished. 2-5 inches.
Uraleskiy Ranniy	50	This dwarf plant is a prolific producer of juicy, great flavored 2-4 oz. tomatoes. *Good for containers
Beaverlodge 6808	55	Very early, very prolific 1.5 inch tomato. It's a small dense plant that creeps, so it's ideal for a *hanging basket container. The flavor is rich and excellent.
Glacier	55	Early, flavorful 2 inch tomato that great in salads or on a sandwich. Great for higher elevations, too.
Gold Nugget	55	Clusters of sweet, nearly seedless golden tomatoes that may not make it from your basket to the kitchen! A Master Gardener favorite. Great for higher elevations, too.
Early Girl Hybrid	55	A favorite of PNW gardeners. Early ripe, red 4-6 oz. tomato with a firm texture that produces large yields all season long.
Moskvich Tomato	60	Early 4-6 ounce tomato with a rich flavor—great in salads and appetizers. Good for higher elevations.
Oregon Spring	60	Cold-tolerant tomato developed by OSU for short season gardeners. Compact plants produce concentrated sets of 4" fruit that is nearly seedless. *Good for containers.
Stupice	60	Great tasting, cold-tolerant, sweet, and very prolific--You'll have 4" tomatoes all season long. Good for higher elevations.
Koralik	61	Clusters of early tomato with great balanced flavor—delightful in salads or snacking. Great for higher elevations, too.
Sweet Pea Tomato	62	Tiny fruits that are huge on flavor. They are great in salads, and you'll be plucking them right of the vine to eat. *Great in hanging baskets and containers

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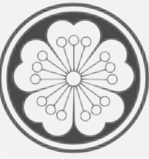


# Tomato terms

- Open pollinated (OP)
  - more or less genetically stable.
  - Seeds should breed true (unless it was pollinated by a different variety).
- Heirloom
  - older open-pollinated varieties (usually defined as pre-1951)
- Hybrid (F<sub>1</sub>)
  - Hand pollinating one variety with pollen from a second variety to produce seed that will grow a third variety.
  - Disease resistance, taste, resist splitting, etc.
  - Seeds won't be like parent plant.



# Categories by use



- Beefsteak
  - Big, juicy, meaty red globe tomatoes
- Slicers
  - Think “Baby beefsteak”--smaller, individual portion, Eg. Early girl
- Paste- Plums or Romas
  - Thick-walled, oblong, lots of flesh, low water content
  - Canning, sauces
- Cherry--smaller the fruit, bigger the flavor
  - 1 inch or less

# Bringing home your tomato plant



- Harden off
  - Place in dappled sun outdoors during the day (a little longer each day).
  - Bring them inside at night until their foliage toughens up a bit.



# Location

- Soil—well-drained, fertile
- Air circulation-too much, too little?
- Irrigation - how far from source?
- Convenience
- Site selection
  - At least 6 hours of sun, more is better.
  - Full afternoon sun south-facing noon-5pm
  - Planting near south or west facing wall for extra radiant heat also helps.





**Choose “bush” varieties  
-usually determinate-  
for containers.**

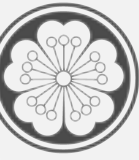


# MASTER GARDENER PLANT SALE

## *Great for CONTAINERS & Small Spaces*

Variety	Days to Maturity	Notes	Variety	Days to Maturity	Notes
Beaverlodge 6808	55	Very early, very prolific 1.5 inch tomato. It's a small dense plant that creeps, so it's ideal for a *hanging basket container. The flavor is rich and excellent.	San Marzano Lungo #2	85	These Italian plum tomatoes are great for eating, but also make a thick, rich sauce because of the nearly seedless, meaty flesh. The bittersweet flavor is accentuated when cooked.
Bush Champion 2 Hybrid	65	*Great for containers and small spaces—only 24 inches tall. It produces a bumper crop of early, great tasting tomatoes.	Saucy	75-75	Early 3-4 inch plum tomato that produces clusters of thick, meaty fruit with a great taste. Release by OSU in 1993—well adapted for the PNW *Good for containers and for higher elevations.
Bush Steak Hybrid	65	Should be staked. Has loads of large, tasty, meaty 8-12 oz. tomatoes. *Great for containers and small gardens.	Siberia	48	The fruits are bright red, averaging 3 to 5 oz., and bunch together in clusters of 30 or more. Great for colder climates. Good in salads and containers. 2.5 stars for taste.
Legend	68	Medium, tasty, 4-5 inch round fruit. OSU hybrid great for the PNW because it sets fruit without fertilization. *Good for containers. Resistant to EARLY & LATE BLIGHT FUNGUS.	Sub Arctic Plenty or World's Earliest	50	Rich tomato flavor *Good for large containers and for higher elevations. Consider container planting another, later fruiting tomato variety (like Marglobe) that will offer tomatoes when this plant is finished. 2-5 inches.
Marglobe	75	These fruits ripen all at once, making them a great choice for canning. It's a prolific bearer and is disease resistant. Good for large containers. 6-8 ounces.	Sweet Pea Tomato	62	Tiny fruits that are huge on flavor. They are great in salads, and you'll be plucking them right off the vine to eat. *Great in hanging baskets and containers
Oregon Spring	60	Cold-tolerant tomato developed by OSU for short season gardeners. Compact plants produce concentrated sets of 4" fruit that is nearly seedless. *Good for containers.	Tumbler Hybrid	45	Very sweet taste and showy in a hanging basket mixed with annual flowers. *Great in hanging containers
Principe Borghese	70-75	These are great for eating, but they are mostly known for making sun dried tomatoes! And their meaty texture make them good for canning, too. *Good for containers in a very warm, sunny area, but they will require staking.	Uraleskiy Ranniy	50	This dwarf plant is a prolific producer of juicy, great flavored 2-4 oz. tomatoes. *Good for containers
Picklebush Cucumber	52	GREAT FOR CONTAINERS. The vines are about 2 feet tall and wide, and bear 4.5 to-11 inch fruit. It's a prolific producer and is resistant to powdery mildew.			

[cowlitzcomg.com/plant-sale](http://cowlitzcomg.com/plant-sale)



# When to plant

- Soil temp should be mid 60s – mid 70s
  - Best tool you can have: soil thermometer!
- Best air temperature: 75-85
  - Temps below 57 delay growth and encourage plant disease
  - >85, pollination doesn't occur (at least not without some help!)

So what does this mean to us in SW Washington?)





# When to plant



Rule of thumb:

Delay planting until the 1<sup>st</sup> or 2<sup>nd</sup> week of June  
(Unless you take precautions)

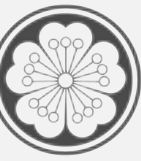


## In the Spring

Data is provided by the NOAA National Centers for Environmental Information.

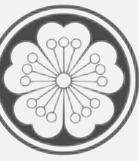
Temperature	10%	20%	30%	40%	50%	60%	70%	80%	90%
Last 28°	Mar 24	Mar 14	Mar 6	Feb 27	Feb 21	Feb 15	Feb 8	Jan 31	Jan 20
Last 32°	May 9	May 2	Apr 26	Apr 21	Apr 17	Apr 12	Apr 8	Apr 2	Mar 25
Last 36°	May 27	May 20	May 15	May 11	May 7	May 3	Apr 29	Apr 24	Apr 17

# How to get a jumpstart on the season



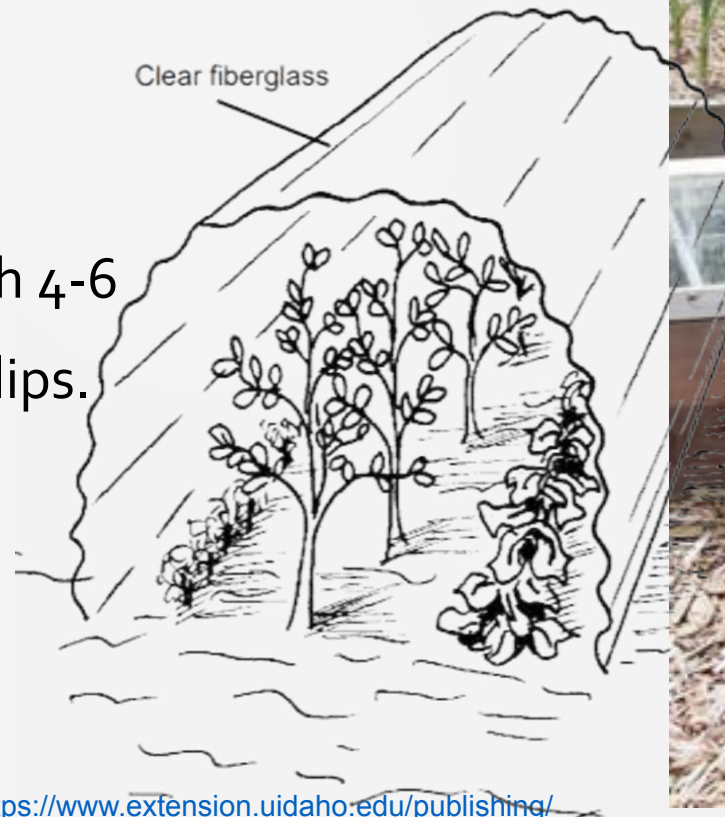
- Raised beds or pots
- Heat your soil
  - Clear or Black plastic or black landscape cloth for two weeks





# How to get a jumpstart on the season

- Heat the air
  - Create structure to trap heat—mini hoop house
  - Place water jugs/bottles inside structures-capture heat during day, release heat at night
  - Cloche—1 inch pcv pipe, cover with 4-6 mil clear plastic, hold in place with clips.
  - Wall o' Waters







# Soil

- Get your soil tested for \$16-\$32 (complete, with recommendations & graphic report).
  - Saves money in the long run.
  - Apply optimal nutrients—too much/too little can be detrimental to plant growth.
  - Environmentally responsible



Soil Tests and Prices	
<b>Basic Soil Test</b> - \$16 per sample	Includes pH, lime requirement, potassium, phosphorus, nitrate-N, calcium, magnesium, soluble salts and fertilizer recommendations.
<b>Basic Test + Organic Matter</b> - \$20	
<b>Basic Test + Fe, Mn, Zn &amp; Cu</b> - \$20	(iron, manganese, zinc and copper)
<b>Basic Test + S and B</b> - \$24	(sulfur and boron)
<b>Complete Test</b> - \$32	All of the tests listed above.
<b>Soil Texture</b> - \$16	Percentage of clay, silt, sand and gravel in the soil, and classification of the soil type.
<b>Toxic Metal Testing</b> - \$24	Levels of lead, cadmium and arsenic in the soil, and interpretation of the results.


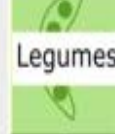
# Rotate your crops every three years



- Soil-borne disease
- Insects
- Nutrient use

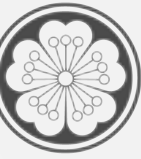
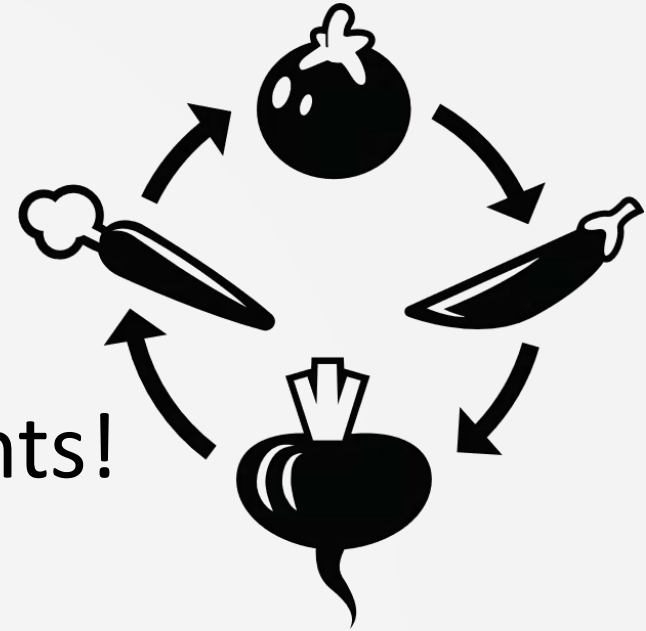


## Crop Rotation for the Home Garden

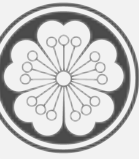
	Bed 1	Bed 2	Bed 3	Bed 4
Year 1	 Legumes	 Leafy	 Fruits	 ROOTS
Year 2	 Leafy	 Fruits	 ROOTS	 Legumes
Year 3	 Fruits	 ROOTS	 Legumes	 Leafy
Year 4	 ROOTS	 Legumes	 Leafy	 Fruits

# Soil

- ROTATE!
- light, compost-rich, slightly acidic
- Feed the soil, the soil will feed the plants!
  - Add organic matter—
  - Creates fertile, well-draining soils, nutrient rich, released slowly –best for plant







# Fertilizing

- Lots of opinions from expert tomato growers
- Tomatoes are heavy feeders
- Unless you have been adding significant organic matter to your soil over several years' time, *you will need to supplement with fertilizer.*



**Complete Fertilizer**

**N P K**

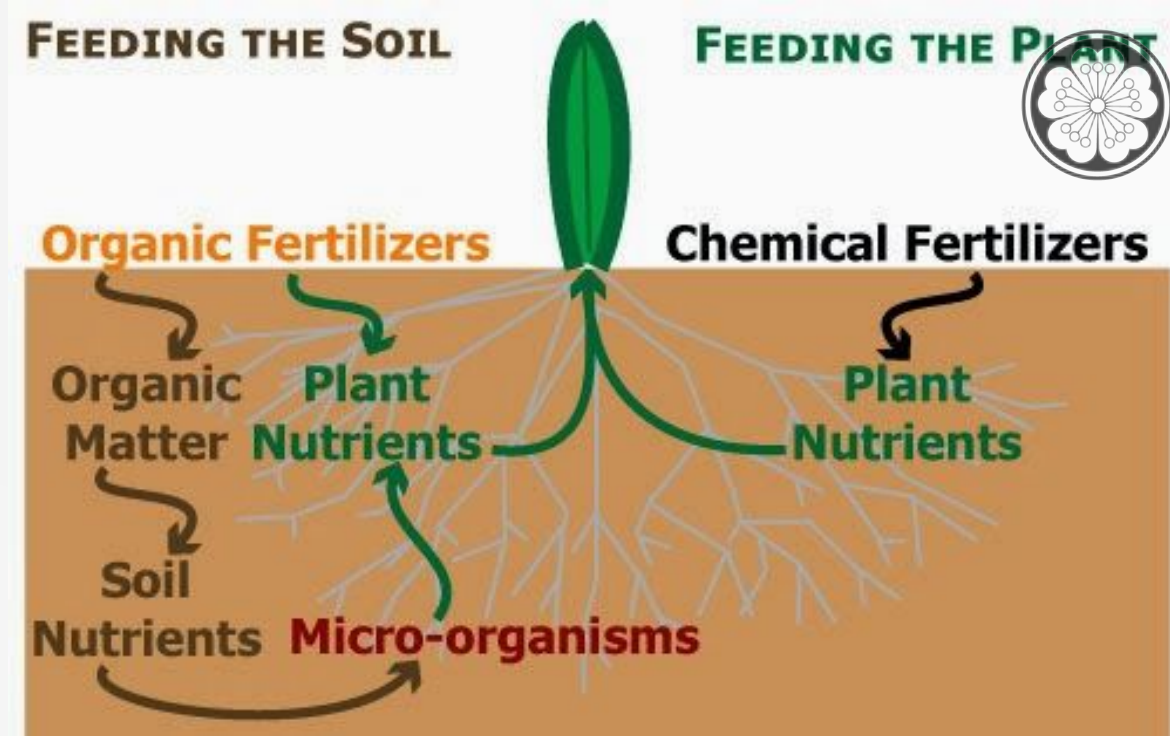
Nitrogen Phosphorus Potassium

Foliage	Roots, Blooming Fruiting	Overall plant health-efficient water use
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# Fertilizers

## Synthetic vs Organic

- Rule of thumb:
  - ORGANIC: Feed the SOIL so it can FEED THE PLANTS
    - Organic fertilizers take time to work but last longer
  - Synthetic fertilizers get the nutrition up into the plants quicker, but leach from the soil quickly



If you are using an organic fertilizer, apply 2-3 weeks before planting so the nutrients will be available to your plants!



# Fertilizing—suggestions from experts

## The hard way, more control

- **At planting**, place a handful (1 to 2 ounces) of a complete fertilizer (4-12-4, 5-10-5, or 5-10-10) a circle 3 inches away from the plant, 3 to 4” deep.
- **At fruit-set**, place an additional application of nitrogen (twice the amount used at planting) in a circle 1 foot away from the plant, helps sustain production.
- **More applications of nitrogen fertilizer are not recommended**, as it tends to promote excessive vine growth and delay fruit maturation.
- **Throw a shovel full of compost** around the plants every other week. --Adding organic matter to the soil improves soil quality and may add nutrient--

OR

Table 1: Recommended amounts of commercial fertilizer

ANALYSIS	AMOUNT PER PLANT AT TIME OF PLANTING
10-10-10	2.5 oz.
12-12-12	2 oz.
15-15-15	1.6 oz.
6-24-24	4 oz.

Table 2: Recommended amounts of organic fertilizer

FERTILIZER	ANALYSIS	AMOUNT PER PLANT AT TIME OF PLANTING
Fish emulsion	5-2-2	8 oz.
Alfalfa meal	2-1-2	1.5 lb.
Horse manure	0.5-1-2	4.5 lb.
Poultry manure	2-2-2	1.5 lb.
Steer manure	0.5-1-4	4.5 lb.

<https://www.extension.uidaho.edu/publishing/pdf/bul/bul0864.pdf>

Great Resource

<https://www.uidaho.edu/-/media/UIDaho-Responsive/Files/Extension/publications/bul/bul0864.pdf>

# How to add organic nitrogen to your soil in spring



Recommendation by Chip Bubl--OSU extension agent:

- **4 pounds actual nitrogen**/1000 sq. ft. (a month before you plant)
  - 100 sq.ft.: 6.4 oz.
  - 32 sq. ft.: 2.13 oz.

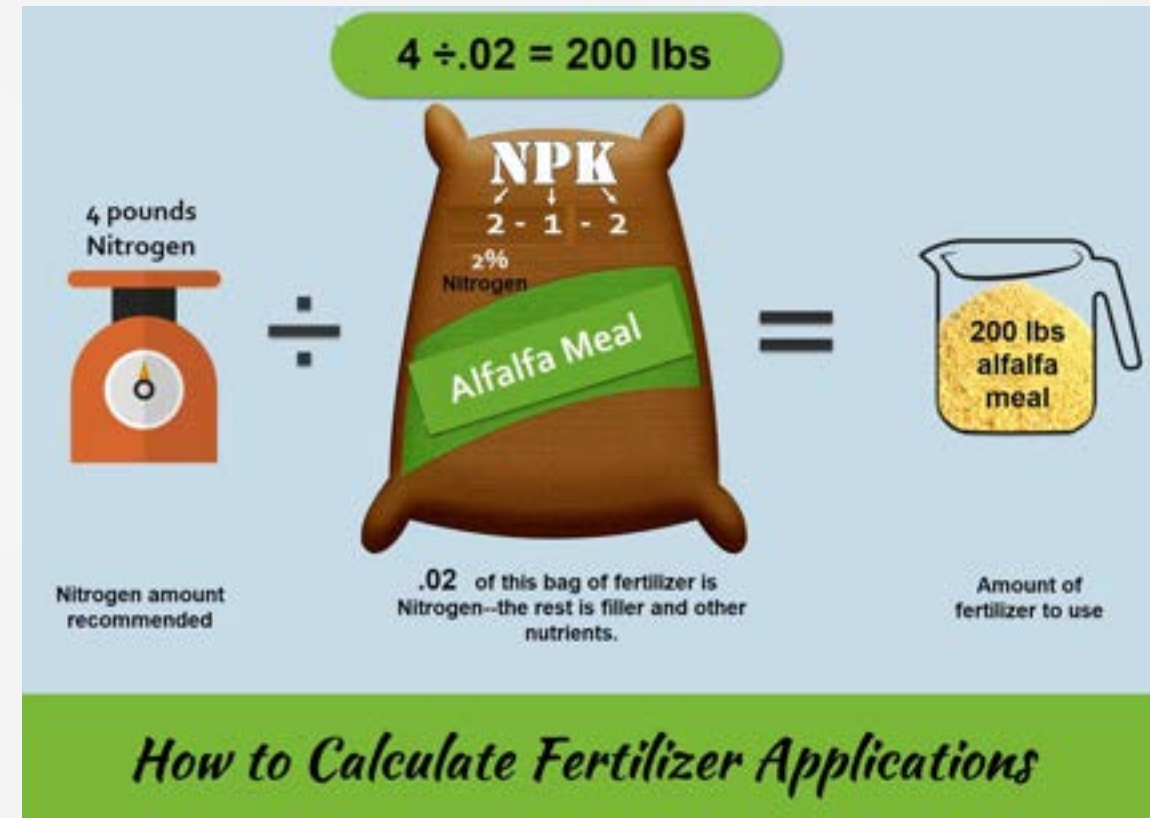
**Step 1** - Determine the percentage of Nitrogen in your fertilizer

- Look at your NPK (e.g. Alfalfa meal **2-1-2**)
- Alfalfa meal contains **2%** Nitrogen (decimal would be **0.02**)

**Step 2** - Determine how much alfalfa meal would be for 1000 ft application of nitrogen

**4 lb** /divided by **.02** =

- 200 lbs. of alfalfa meal per 1000 sq. ft.
- 20 lbs. of alfalfa meal per 100 sq. ft.
- 6 lbs 10 oz. per 32 sq. ft. raised bed (typical 4' x 8')



List of organic fertilizers and NPK-how much to apply /100 sq. ft. <https://cmg.extension.colostate.edu/Gardennotes/234.pdf>

No-math fertilizer calculator: <https://homesoiltest.msu.edu/tools/fertilizer-calculator/>

# OR

## The easy way



- Use a fertilizer formulated for tomatoes- just follow label directions

**Hi-Yield®**  
**Tomato & Vegetable Food**

HI-YIELD® TOMATO & VEGETABLE FOOD provides the proper nutrients necessary to promote vigorous growth, more and larger Tomatoes and vegetables.

**DIRECTIONS FOR USE**

**NEW TOMATO PLANTS**  
Apply 2 tablespoons per plant. Mix thoroughly with soil in each hole. Water each setting thoroughly after application.

**ESTABLISHED PLANTS IN BEDS**  
Apply 2 lbs. per 50 square feet of row. Work lightly into soil and water in thoroughly.

**ESTABLISHED PLANTS IN ROW**  
Apply 1½ lbs. per 20 feet of row. Work lightly into soil and water in thoroughly. Buyer assumes all risk of use, storage or handling of this material not in strict accordance with directions given herewith. This product is not intended for nor recommended for container grown plants.

**4-10-6**  
**GUARANTEED ANALYSIS**

Total Nitrogen (N).....	4%
4.0% Ammoniacal Nitrogen	
Available Phosphate (P2O5).....	10%
Soluble Potash (K2O).....	6%
Derived From: Ammonium Phosphate, Ammonium Sulfate, Muriate Of Potash.	

F370

About 2 lbs for a 4 x 8 raised bed  
About 1 pound for a 4 x 6 bed  
4-5 oz per plant.



- For single plants mix 3 tablespoons of Tomato-tone into the soil when planting.  
- For potted plants mix one part Tomato-tone to 30 parts soil mixture (1.25 cups of Tomato-tone for every 8 qt. of soil).

**Tomato-tone®**  
**3-4-6**

**Feeding**

Apply Tomato-tone after plants are well established (10 - 14 days) and then twice a month during the growing season (May through August).

- Rows: 1 cup each side per 5 feet of row.
- Single Plants: 3 tablespoons per plant.
- Potted Plants: Apply 1.5 teaspoons per 4" of pot diameter (1.5 tablespoon per 12 inch pot diameter).

**Application Methods**

- Apply Tomato-tone in a narrow band around single plants or along each side of a row. Keep Tomato-tone at least 3" from stem.
- Potted Plants: Apply evenly over soil and gently mix in.
- Water thoroughly after feeding.



# Growing in Containers

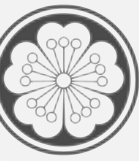
- 4-5 gallon container, holes in bottom (NO gravel, rocks at bottom), elevate off hard surface for good drainage.
- Good quality potting soil
- Fertilizing--if soil doesn't have "3 month" supply of fertilizer, use a time-release pellet or granular fertilizer when planting, such as Osmocote or other brands.
- Container plant tend to leach out nutrients, so they will need to be fertilized regularly (starting at 2 weeks after planting) during the growing season--according to directions! More is NOT better.

## Examples

- Miracle Grow Tomato Plant Food 18-18-21
- Nature's Source Plant Food 10-4-3
- Miracle-Gro Liquid All Purpose Plant Food 12-4-8
- Organic Nature's Source 15 3-1-1
- Organic Plant Magic 6-5-5



If you are using an organic fertilizer, apply 2-3 weeks before planting so the nutrients will be available to your plants!



# Fertilizing—suggestions from experts

## The REALLY easy way

- Feed the soil , let the soil feed the plants!
- BUILD GOOD SOIL!
  - Add 6 inches of organic matter (LEAVES!!) Every fall
  - Shovel full of compost around each plant when growing every 2 weeks
  - May take 4 years to build up the soil microbes



# Enough Fertilizer? How to tell

## LISTEN TO YOUR PLANTS!

- Organic matter can supply much, and sometimes all, of the nutrient needs of tomatoes.
- Don't over fertilize.
  - Leaves should be deep green without any hint of yellowing
- Indications of too much nitrogen:
  - Dark and almost bluish green color
  - Or tall and spindly but not many flowers—too much N
  - Aphid, spider mite, or thrips infestation--love over-vigorous, N-induced new growth
  - Lots of leaves, but no fruit—too much N, too much water.

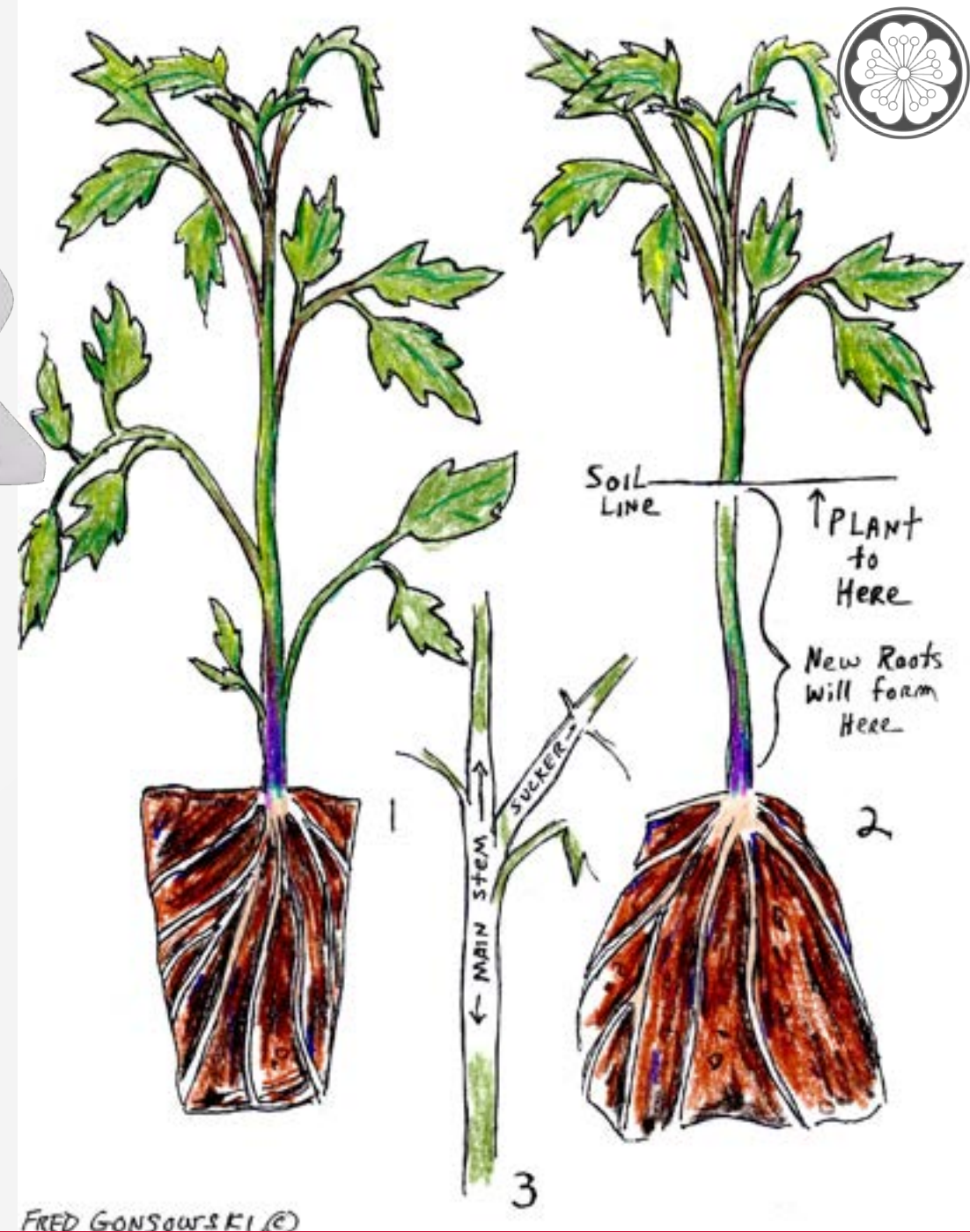


# How to plant

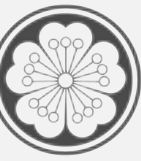
- At least 2 feet apart
- Strip the leaves off the lower stem, and bury the stem.



gardeningknowhow.com



# How to plant

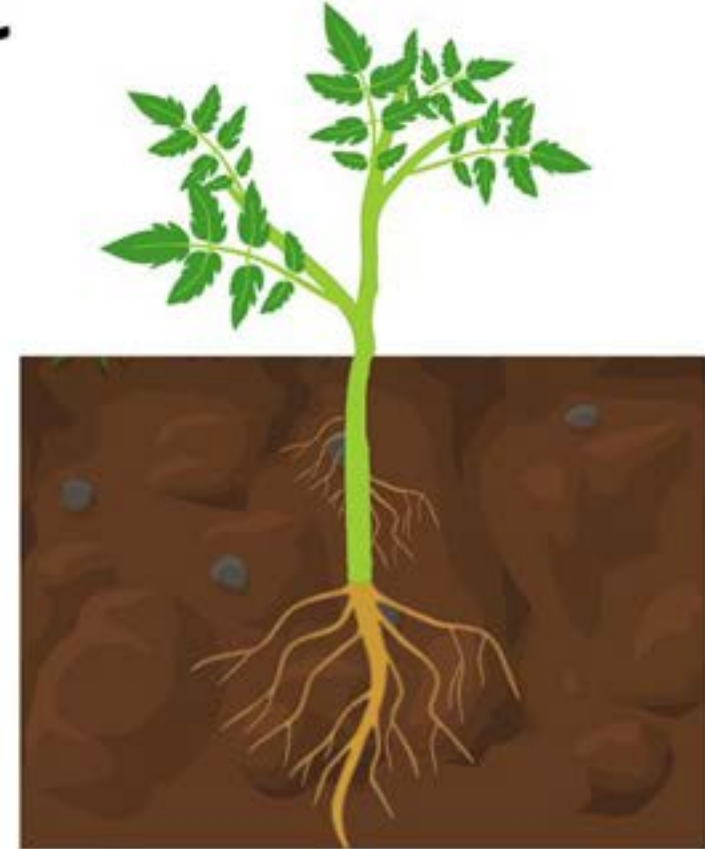


## Two Ways to Plant a Tomato

### Bury it



- Works well with deep, loamy soil.
- Pinch off lower leaves
- Dig a hole
- Bury the plant right up to the leaves
- Roots will grow along the stem





## Two Ways to Plant a Tomato

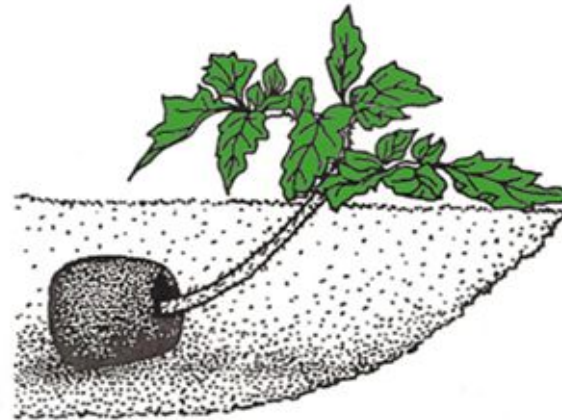
### Trench it

- Works well with raised beds with hard clay soil underneath

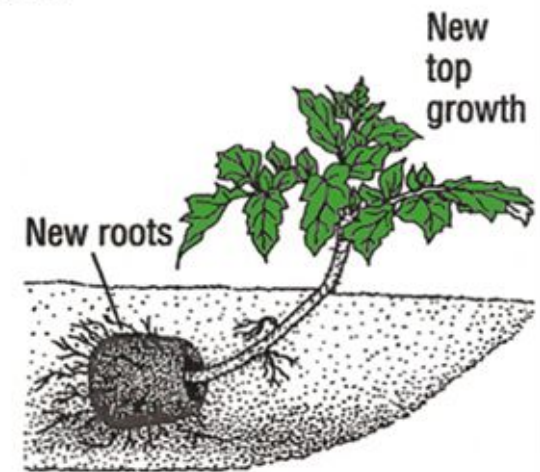
#### *PLANTING TOMATOES IN TRENCHES*



**Preparing plants.** Strip off all but the top set of leaves from the stems.



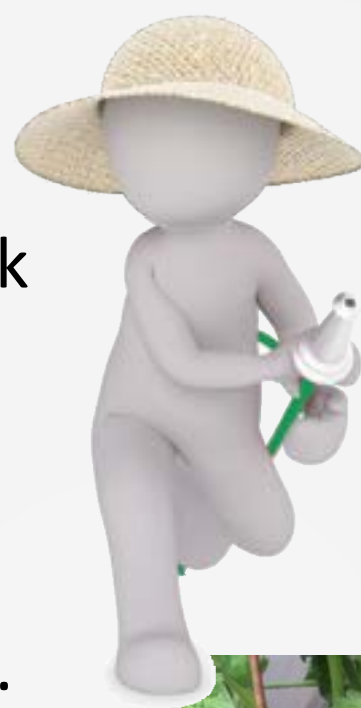
**Planting.** Set plants horizontally in a 2- to 3-inch-deep trench and firm the soil.

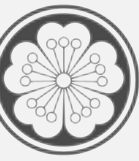


**New growth.** The plant top will turn upward and the buried stem will produce roots.

# Watering

- Rule of thumb: 1 inch per week
- Water at ground level, not on leaves
- Water in the morning
- Water **deeply** and **consistently**.
  - Cracked fruit
  - Blossom end rot
- Mulch to retain moisture

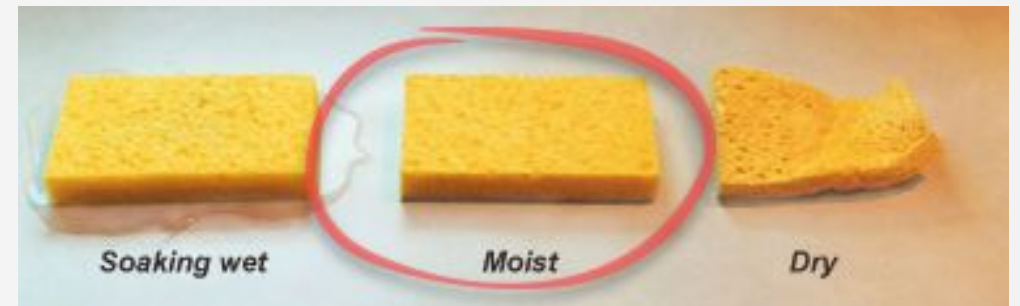




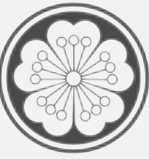
# Watering—How much is enough?

- **Feel the soil**

- Dig down few inches in a few areas around the tomato plant.
  - Muddy and soggy? **OVERWATERING**
  - Really dry 6 inches down? **INCREASE WATER**
  - Your soil at 6 inches should be **moist, like a mostly wrung out sponge.**



# Watering—How much is enough?



## Drip irrigation

- Puts the water exactly where you need it
- Keeps the soil consistently moist with "sips" all day long
- Decrease weeds
- Conserves water

## **BUT...**

- You can't set it and forget it!
- Tomatoes need more water as they grow more leaves
- When the weather is hot and/or windy



# Mulching

## Why?

- Moderates soil temps
- Maintain soil moisture
- Reduces weed competition
- Keeps leaves off the soil

## What kind?

- Best early spring mulch clear plastic
- Best heat preserving mulch--black plastic
- New colored film mulch--Red
- Organic mulch builds soil-untreated grass clippings, shredded leaves



# Support options



[Florida Weave technique.](#)



[finegardening.com](http://finegardening.com)

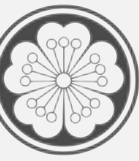


[Epicgardening.com](http://Epicgardening.com)



[theartofdoingstuff.com](http://theartofdoingstuff.com)





# Should you prune your tomato plants?

It's about balance--leaves are the plant's food factory, but...

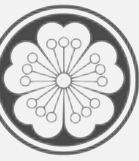
## Benefits:

- Allows plant to focus energy on producing fruit
- Larger fruit
- Better air circulation
  - Less fungal plant disease
  - less insect pest pressure

## Benefits:

- Easier to support
- Much easier to harvest fruit
- EARLIER MATURITY
- HIGHER EARLY YIELD





# How to prune your tomato plants

**Most indeterminate plants benefit from pruning**  
**Care must be taken with determinate plants**

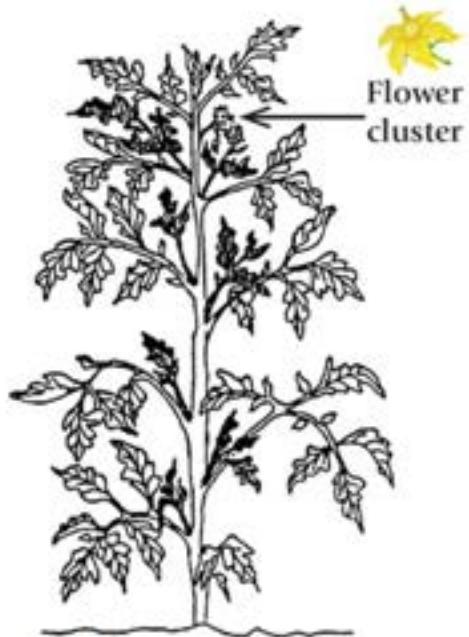


Figure 1A. A nonpruned plant. The suckers are shaded for simplification and the first flower cluster on the main stem is labeled.

**Un-pruned plant**

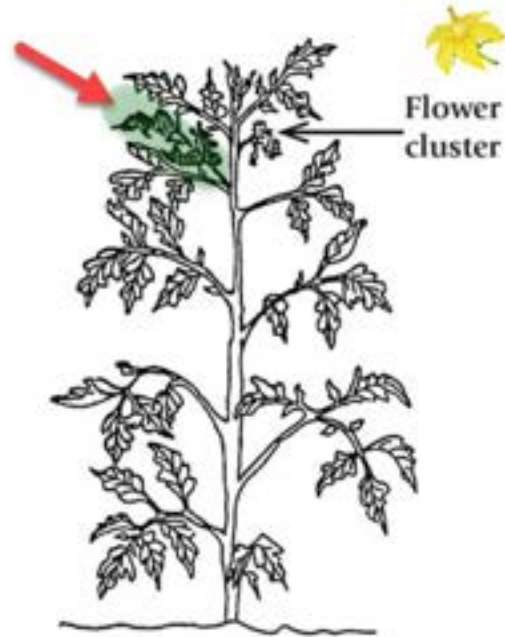


Figure 1B. Plant that is pruned heavy (to the "fork"). Notice that the sucker immediately below first flower cluster on main stem has not been removed.

**Heavily pruned**



Figure 1C. Plant that is pruned light. Notice three additional suckers remaining on plant; compare with Figure 1B.

**Lightly pruned**

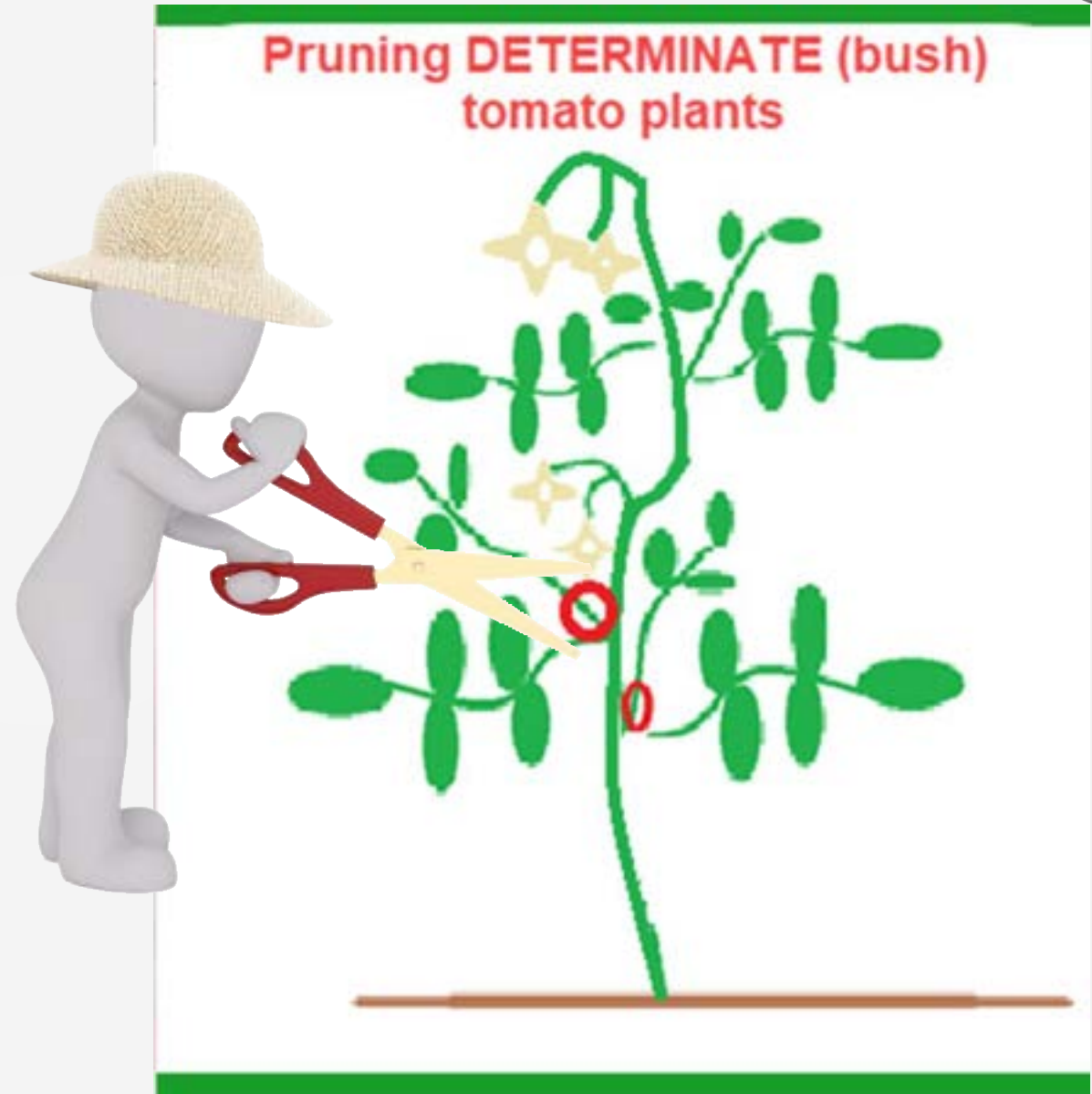
# Should you prune your tomato plants?



Determinate (bush)--if desired

From the bottom up, pinch off all stems below the level of the first blossoms

- Do not remove any other foliage because the fruit will form onto clusters between each leaf and at the end of each stem. If you remove these you will have far fewer tomatoes!



# Pruning your INDETERMINATE tomatoes



- Remove suckers--"extra arm growing from armpit"
- Better removed when 2-3 inches.



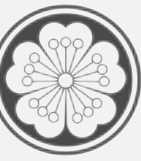
# Pruning your INDETERMINATE tomatoes



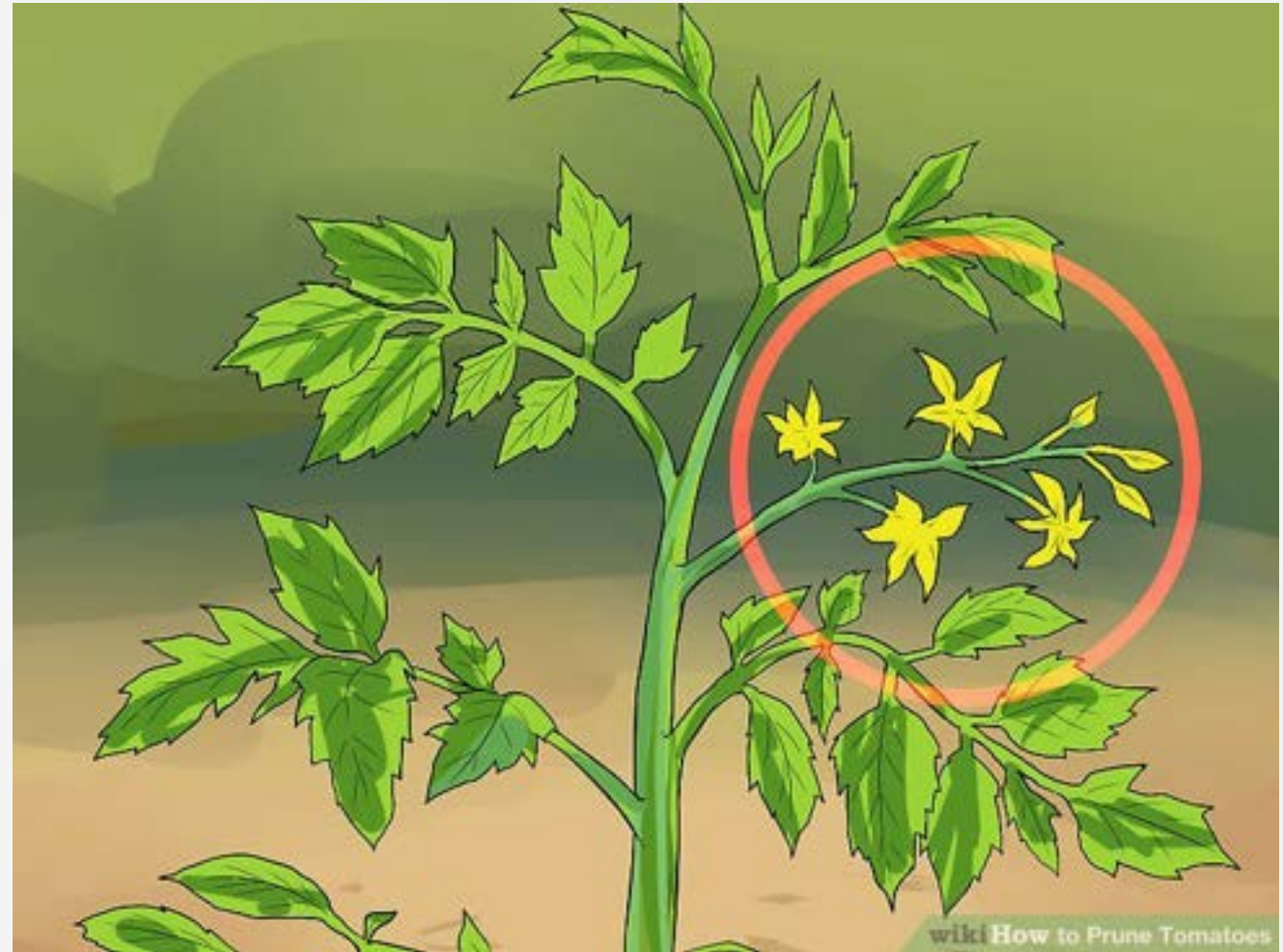
Remove all leaves from 1 foot from ground when tomatoes are 4' tall or when spots appear on lower leaves



# Pruning your INDETERMINATE tomatoes



- Remove flowers until plants are 12 to 18 inches tall
- This helps the new transplant put energy into developing good roots



# Pruning your INDETERMINATE tomatoes



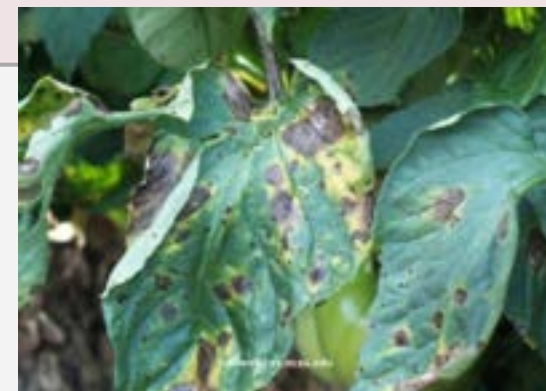
- Top (remove the terminal shoot) tomato plant
  - If it reaches the top of trellis--or when it becomes to tall for you to reach!
  - On September 1st (stops growth of new leaves, blossoms)--more about this later



# Managing your Tomatoes in Extreme Heat



Problem	Explanation	Solution
<b>Flowers dry up and fall off; no new tomatoes for a couple of weeks</b>	Temps in 90--pollination can't happen. Not as much insect activity, either.	Help pollinate the flowers by buzzing the blunt end of your electric toothbrush on the flower or stem
<b>Tomatoes showing signs of needing nitrogen despite fertilizing properly (lower leaves yellowing)</b>	Frequent watering because of the heat can leach nutrients, especially nitrogen, from the soil.	You may need another application of your usual nitrogen fertilizer if you notice this.
<b>Tomatoes wilting mid-day, but soil is still damp</b>	The plant closes up its cells to prevent moisture loss through the leaves. When a leaf is wilted, it reduces the surface area exposed to sunlight, thus slowing down water loss.	If the soil is moist, the plant will perk up by late evening or in the morning. Resist the urge to water it. Check soil moisture in the morning.
<b>Spots appearing on the lower leaves of the plant after watering overhead</b>	The lowest leaves and those in the back of the plant are most likely to first show signs of fungal disease from wet leaves.	Water at the base of the plant, keeping leaves dry. Prune off affected branches as soon as you see them. Don't compost. Prune lower leaves so they are not touching the ground. Mulch beneath plant so fungal spores don't splash up on





# Managing your Tomatoes in Extreme Heat



Problem	Explanation	Solution
<b>Leaves burnt, tomatoes sunburned</b>	The sun can heat up the surface of the leaves and fruit, causing damage.	Use shade cloth to keep sun of plants during hottest part of the day. Make sure not to wrap the plant--it needs good air flow or it will cook! Keep fruit shaded by leaves--don't over-prune!
<b>Fruit cracking/splitting</b>	Sudden changes in soil moisture levels, leading to rapid expansion of the fruit that exceeds the growth of the tomato skin.	Keep your soil consistently moist. Don't let it dry out completely. Appropriately regulated drip irrigation systems are the easiest way to control consistent soil moisture
<b>Blossom end rot</b>	inconsistent soil moisture--calcium is unavailable to the plant	See above.



# Practical solution for good tomatoes during heat waves



- Don't wait until something happens to your tomatoes--heat, insects, disease, bird damage
- Pick your tomatoes at the "breaker stage" when they are just beginning to blush with color.
- Ripen tomatoes on your kitchen counter--same excellent full-bodied flavor, and none of the problems!



# Help with tomato problems

<https://hortsense.cahnrs.wsu.edu/vegetables/>



## Diseases

[Tomato: Anthracnose](#)

[Tomato: Blossom-end rot](#)

[Tomato: Catface](#)

[Tomato: Curly top \(Beet curly top virus\)](#)

[Tomato: Late blight](#)

[Tomato: Mosaic viruses](#)

[Tomato: Physiological leaf roll](#)

[Tomato: Sunscald](#)

[Tomato: Verticillium wilt](#)

[Tomato: White mold](#)

## Insects

[Tomato: Aphids](#)

[Tomato: Brown marmorated  
stink bug](#)

[Tomato: Colorado potato beetle](#)

[Tomato: Flea beetles](#)

[Tomato: Slugs](#)

[Tomato: Spider mites](#)

[Tomato: Tomato hornworm](#)

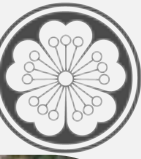
# Common sense approach to plant problems



1. **Monitor** the pest's activity and adjusting methods over time. **This means going out into your garden every day.** It's easier to stop small problems than to correct large ones.
2. Use a **variety of common-sense methods** to control problems in the garden, not just using pesticides!
3. **Tolerate** harmless pests.
4. **Set** a threshold to decide when it's time to act. Not every problem needs to be "treated."
5. **REPEAT** steps 1-5 all growing season long



# 1-2-3 How to invite beneficial insect to your garden



## 1. Create nesting opportunities:

- Tolerate some garden chaos--they need undisturbed areas to nest, lay eggs and overwinter.
- Some bare ground
- Coarse mulch, leaf litter, stumps, underbrush, bare ground,
- stem stubs, mud

## 2. Provide food and water

- Water saucer filled with pebbles
- Plant variety of flowers in large groupings that bloom from early spring to late fall (including bulbs, shrubs, and trees).





# 1-2-3 How to invite beneficial insect to your garden

3. Reduce or eliminate pesticide use.
  - a. Monitor your garden to find and eliminate problems early
  - b. Use non-chemical methods to manage the problem
  - c. Tolerate a few bugs
  - d. Last resort--pesticides--**Never use pesticides on flowering plants,** use the least toxic pesticide, spot-spray only
  - e. **READ THE LABEL!**



**CAPTAIN JACK'S**

TRUSTED SINCE 1926  
**BONIDE**

**DE**

Active ingredient: spinosyn A and spinosyn D ..... 0.5%  
Other ingredients ..... 99.5%  
Total ..... 100.0%

Contains 0.04 lb of active ingredient per gallon.  
EPA Reg. No. 4-471 EPA Est. No. 4-NY-1

**Concentrate**

**Kills bagworms, borers, beetles, caterpillars, codling moth, gypsy moth, loopers, leaf miners, spider mites, tent caterpillars, thrips and more!**

**ACTIVE INGREDIENT:** spinosyn A and spinosyn D ..... 0.5%  
**OTHER INGREDIENTS:** ..... 99.5%  
**TOTAL:** ..... 100.0%

Contains 0.04 lb of active ingredient per gallon.  
EPA Reg. No. 4-471 EPA Est. No. 4-NY-1

**Keep Out Of Reach Of Children**  
**Net Contents 32 FL. OZ. (946 ML.)**

**Spider Mites**  
**Bagworms**  
**Leaf Miners**  
**Codling Moth**  
**Tent Caterpillars**

**FOR ORGANIC GARDENING**

# Label example

**HOW TO MIX**

Add the required amount of this product to the specified amount of water, mix thoroughly, and apply uniformly to both upper and lower surfaces of plant foliage. Mix only as much spray as needed for a single treatment. In vegetable gardens, for best results, do not use more than 3 gallons of spray for 1000 sq ft of area. Do not use kitchen utensils for measuring. Keep measuring utensils with product and away from children.

Unit of Measure <sup>1</sup>	Amount of this product to Use per Pint, Quart or Gallon of Spray		
	Per Pint (16 fl oz) of Spray	Per Quart (32 fl oz) of Spray	Per Gallon (128 fl oz) of Spray
Fluid Ounces (fl oz)	0.25 fl oz	0.5 fl oz	2 fl oz
Tablespoons (Tbs)	½ Tbs	1 Tbs	4 Tbs

<sup>1</sup> Conversion factors: 2 tablespoons (Tbs) = 6 teaspoons (tsp)

**HOW TO APPLY**

**Shake Well Before Use**  
This product may be applied with trigger sprayer, hand-held, backpack, or hose-end sprayers. Use a hose-end sprayer that can be adjusted to provide a dilution ratio of about 2 fl oz of this product (4 Tbs) per gallon of spray.

**WHEN TO APPLY**  
Apply when listed pests are present. Repeat applications may be made as indicated in the Home Gardens section. See your state extension service recommendation for treatment guidelines in your area.

Crops	Pests Controlled	Maximum Number of Applications per Season	Minimum Days to Wait Before Reapplying	Minimum Days to Wait from Last Application to Harvest
cole crops (Brassica vegetables), including, but not limited to: broccoli, rucoli raab, brussels sprouts, cauliflower, avalo, Chinese broccoli, abbage, Chinese cabbage (bok choy), Chinese cabbage (napa), Chinese mustard cabbage gai choy), collards, kale, kohlrabi, mizuna, mustard greens, mustard spinach and rape greens	cabbage looper diamondback moth imported cabbage worm leafminers worms	6	4	1
scurbits, including, but not limited to: cucumber, edible gourds, ruskmelons (cantaloupe, honeydew, etc.), pumpkin, summer and winter squash, and watermelon	leafminers thrips worms (caterpillars)	6	5	all except cucumber, 3 cucumber, 1
ruiting vegetables, including, but not limited	Colorado potato beetle	6	4	1

**ALWAYS read the label!**  
**ALWAYS follow directions!**

## ENVIRONMENTAL HAZARDS

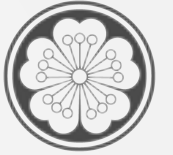
This product is toxic to bees exposed to treatment for 3 hours following treatment. Do not apply this pesticide to blooming, pollen-shedding or nectar-producing parts of plants if bees may forage on the plants during this time period. This product is toxic to aquatic invertebrates. To protect the environment, do not allow pesticide to enter or run off into storm drains, drainage ditches, gutters or surface waters. Applying this product in calm weather when rain is not predicted for the next 24 hours will help to ensure that wind or rain does not blow or wash pesticide off the treatment area. Rinsing application equipment over the treated area will help avoid run off to water bodies or drainage systems.

**Figure 15. Pesticide labeling**

These insecticide products are equally toxic to bees.



# Organic-Least to most toxic to beneficials



**Bt** -caterpillars--little or no toxicity to any other organism

**Diatomaceous Earth**

**Horticultural oils** (Smothers--Needs complete coverage)

**Neem Oil**--Check active ingredients--No azadirachtin (Contact-smothers)

**Azadirachtin** (Derived from neem tree but is not neem oil) (Repellent and insecticide—**apply at night**-insect must ingest)

**Insecticidal Soap** - Potassium salts of fatty acids (Contact spray-needs complete coverage--not preventive)

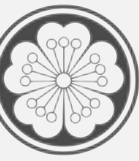
**Spinosad** - E.g., Entrust, Success, Regard, Bonide Captain Jack's Deadbug Brew R-T-U; **apply at night** (contact, but most effective when larvae eat it)

**Boric Acid** - ants (Ingest)

**Pyrethrin** - highly toxic--apply at night (touch or eat it)

**IMPORTANT: NEVER spray a pesticide on a plant that's flowering**





# Watch for problems-be vigilant!

- Keep your garden clean
- Remove infected leaves or plants
- Problems to watch for
  - Leaf-curling—stress
    - Too much water
    - Not enough water
  - Blossom end rot
    - **Inconsistent watering**
    - If soil test shows calcium deficiency (unlikely in our soils) use-calcium carbonate (pulverized lime in fall)
    - Don't use Epsom salts (magnesium sulfite)



# Pests

- Learn to accept that you'll have some insects
  - Aphids
  - Flea beetles
  - Stink bugs
  - Slugs
  - Cut worms/loopers



**Use pesticides as a last resort  
FOLLOW ALL LABEL  
DIRECTIONS!**



# Diseases



- Late Blight
  - Windborn watermold
  - Thrives in damp soil
  - Shows up in late summer
  - If rain is expected, cover your plant with plastic, if possible--keep leaves dry!
  - Destroy plant, do not compost
  - Fungicides available



# Diseases

- Verticillium wilt
  - Fungus in SOIL
  - Attacks roots and moves up
  - Plant resistant varieties
  - Clean up plant debris and destroy or discard**ROTATE CROPS!**

For advice about tomato problems, call us at the Plant and Insect Clinic--360-577-3014. You can also do some research on your own. Very reliable sites, especially Hortsense:

**Tomato diseases and disorders**

<https://hgic.clemson.edu/factsheet/tomato-diseases-disorders/>

**WSU Hortsense--Tomato problems--view list at left**

<http://hortsense.cahnrs.wsu.edu/Search/MainMenuWithFactSheet.aspx?CategoryId=5&PlantDefid=56>



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**WSU Hortsense--**

# Getting red tomatoes: At the end of August



- Any fruit that hasn't set by then won't ripen.
- Cut off all blossoms and growing tip of each plant to the first node.
- Remove most of the leaves.
  - From bottom up
  - If very hot weather expected, keep leaves that shade tomatoes.
  - Better circulation helps prevent late blight.
  - Plant's energy focuses on ripening fruit.
- Old wive's tale about restricting water--continue watering to keep the soil evenly moist



# Red tomatoes from green-off the vine



- Harvest largest, unblemished, mature green tomatoes, wipe clean.
  - Reasonable size and color turning “pearly”)
- Clip stem close to fruit.
- Place in open cardboard box.
- Room temperature—70 degrees
- Check for spoiled fruit.
- Should ripen in around 14 days



# End of season:

- Remove ENTIRE tomato plant from
- Add 6 inches organic material to t
- Consider topping with arborist wo  
nourish soil over the winter.









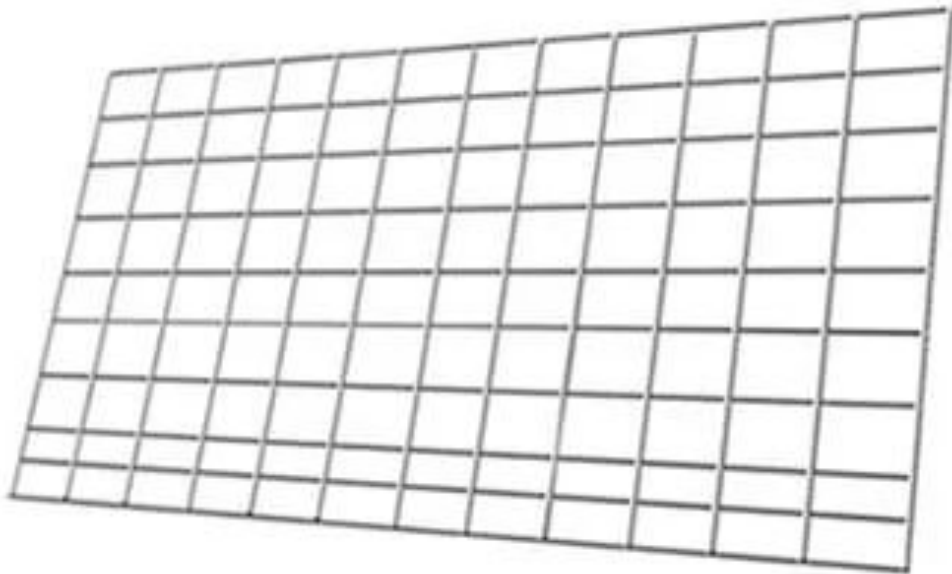
# Why I like the tomato cages

- Easy to make
- Inexpensive
- Portable
- Storable
- Access to plant and fruit.
- Use them in winter to hold down tarp over shredded leaves in raised beds.



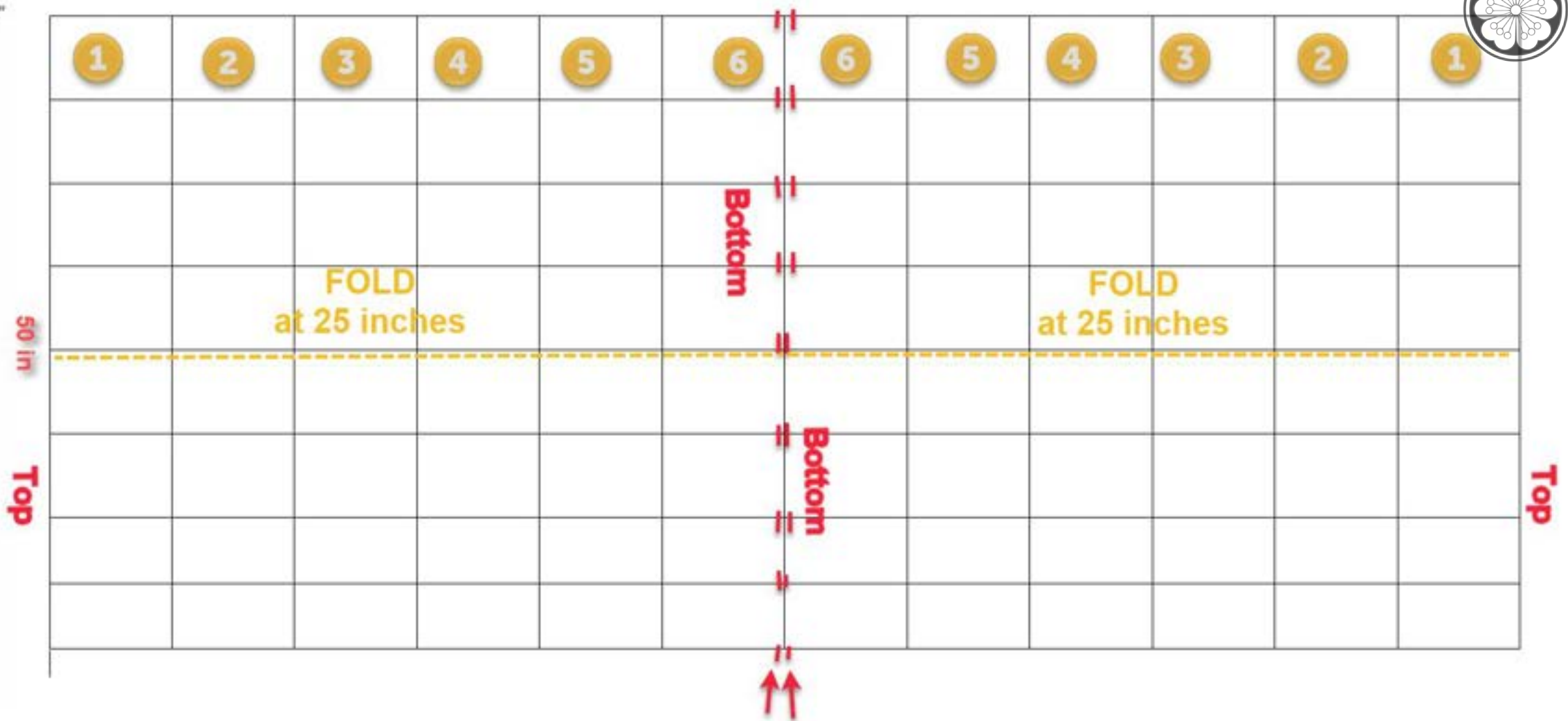
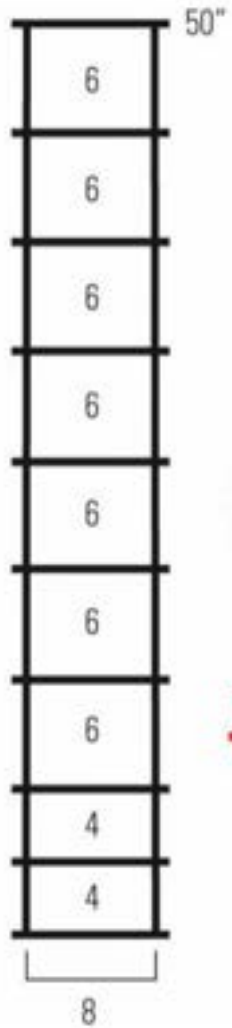


# Cattle panel



- Item description: “The 4-gauge galvanized wire panels in standard 8-foot lengths with 8-inch spacing between vertical wires.”
- Completed size of cage--about 40 inches tall, 25 inches on each side.

96 inches 8 ft



# STEP 1

Cut out center wire and discard. The resulting open ended spikes will be your base that anchors into the ground around your tomato





# BUILD A "LIFETIME" TOMATO CAGE



Master Gardener Program

WASHINGTON STATE UNIVERSITY  
EXTENSION

# Florida Weave



- What is it?
- Why use it?
- Equipment Needed
- How to do it
- When to do it

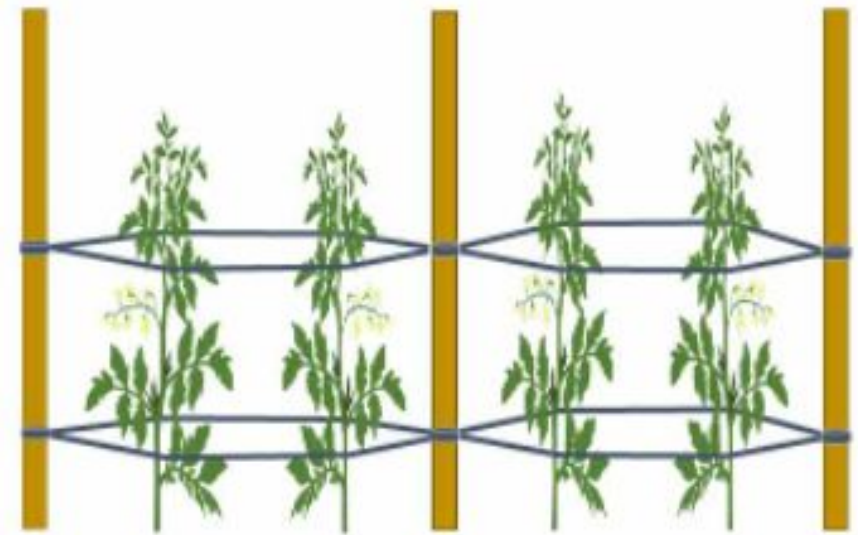
# What is the Florida Weave?



- Trellising technique designed for speed – works with both Determinates and Indeterminate
- Also known as the “Basket Weave” or “Stack
- Sandwiches the plants between two “walls’



Top View



Side View

Photo from  
<https://ofags.com/how-to-trellis-tomato-plants/>

# Why use the Florida Weave?



- 
- Good for growing many tomato plants in rows
  - Fewer stakes needed than staking each plant
  - Improves air circulation, thus reducing disease
  - Holds plants upright and off the ground
  - Easier harvest – easier to find and access fruit
  - Fast and easy to set up
  - Reusable – and easy to store between seasons, too.
  - Relatively inexpensive; can use everyday supplies around the yard



# Why use the Florida Weave? - My exam



# Equipment Needed



## Stakes

- Strong enough to hold plants off the ground
- Should have a non-slip surface to “grab” the twine
- Good options: steel fence T-posts, rebar, 2x2 wooden stakes

## Twine

- Needs to resist weathering (look for UV resistant)
- Needs to resist stretching (very important!)
- Needs to bind well to the stakes
- Good option: **Nylon or Polypropylene** “baler” twine

## Optional – Homemade Wand

- Serves as an extension of your arm. Less bending.
- Use 12-36 inch PVC pipe or wooden stake/dowel with holes drilled in each end
- Pull twine thru one end, out other



# How to do it: Preparation & Staking

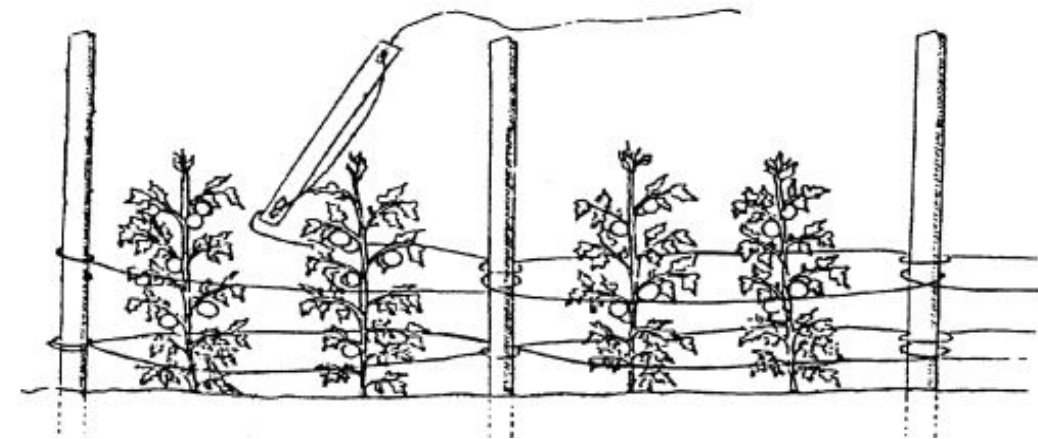
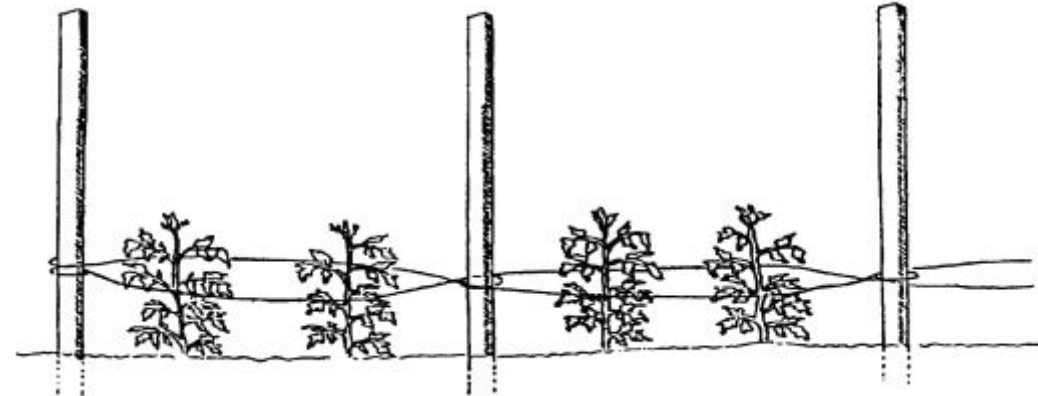


- Plant Preparation BEFORE you start
  - Prune
  - Plant tomatoes in a row, leaving 2 ft. between each plant. Don't cheat!
- Drive stakes into Ground
  - Drive stakes 12-18" into soil between every other plant (or if needed, between each plant). Go further down for more strength/stability.
  - A stake is typically driven between every two plants, but you can do closer (between each plant) or further away (between every 3 plants)
  - Stakes need to be tall enough for the type of tomato plants you are growing (6-8 ft.)

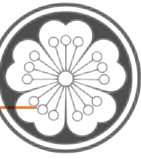
# How to do it: Weaving



- First stringing - approx. 2 inches below the first blossom
- Create the "weave":
  1. Tie twine to one of the end stakes, approx. 6-8" from
  2. Next, take twine past the plant (or plants), pull tight (same height)
  3. Repeat the process to the end of the row
  4. At end of row, wrap or tie twine around the end stake
  5. *Now go the opposite direction:* Bring twine back on (same height), wrapping around each stake, and tie off again at the end of the row.
- Add stringings as plants grow. Each subsequent stringing -
- Variations – figure 8 between each plant, 1 or 3 plants



# When to do it



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EARLY, EARLY, EARLY! Learn from my mistakes!

---

When plants are 12-15" tall – but before plants fall over

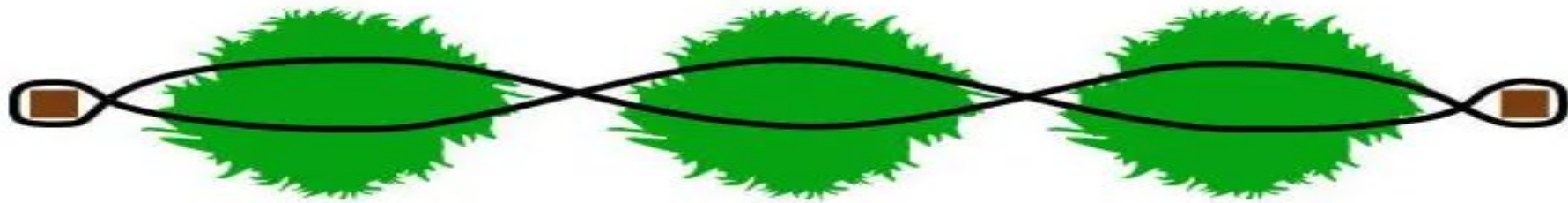
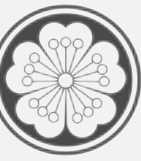
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When foliage is dry to prevent potential spread of bacterial diseases

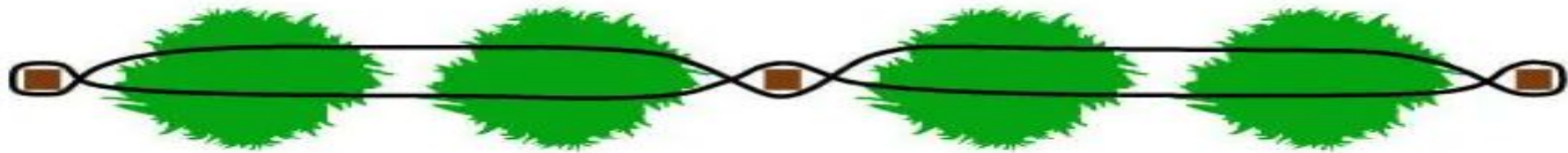
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**TIP:** Remove suckers from plant as it grows (indeterminates only) to keep them from getting out of control.

# Example: GardenBetty.com

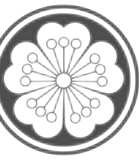


Aerial View of Florida Weave



<https://www.gardenbetty.com/trellising-tomatoes-with-the-florida-weave/>

Example: [4theluvofgardening.blogspot.com](http://4theluvofgardening.blogspot.com)





## Example:

Example: [4theluvofgardening.blogspot.com](http://4theluvofgardening.blogspot.com)

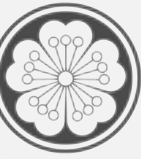


Next slide: Great demonstration video of [Florida Weave technique](#).





# We've got you covered!



WSU Cowlitz County  
MASTER GARDENER

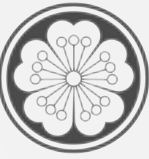


PLANT AND INSECT  
CLINIC

Let us help you find the answers to your questions!

**FREE advice: 360-577-3014**  
**[cowlitzmastergardener@gmail.com](mailto:cowlitzmastergardener@gmail.com)**

**WSU Extension Office**  
**304 Cowlitz Way, Kelso**



## **Cowlitz Master Gardener Video Workshops YouTube Channel**

<https://www.youtube.com/playlist?list=PLyzAebJVp26k9ri3UIJMABg86RCsJ4Wyy>

**Cowlitz Master Gardener Workshop handouts** <https://www.cowlitzcomg.com/workshop-videos>

**Basket weave stakes** <https://youtu.be/XSf3aSj46jo>

**Soil Testing** <http://www.simplysoiltesting.com/>

**Growing tomatoes in cool, short season locations** <https://www.extension.uidaho.edu/publishing/pdf/bul/bul0864.pdf>

**Short season vegetable garden** <https://www.extension.uidaho.edu/publishing/pdf/PNW/PNW0497.pdf>

**Growing Tomatoes in Home Gardens** <https://s3.wp.wsu.edu/uploads/sites/2070/2019/09/FS145E.pdf>

**Grow Your Own Tomatoes and Tomatillos** <https://catalog.extension.oregonstate.edu/ec1333/html>

**Pruning tomatoes (Univ of Idaho)** <https://www.youtube.com/watch?v=JyF7ufcR8S4>

**Mulching guide** [https://s3.wp.wsu.edu/uploads/sites/2088/2017/04/Mulches\\_RS003-2010.pdf](https://s3.wp.wsu.edu/uploads/sites/2088/2017/04/Mulches_RS003-2010.pdf)

**Colored Mulch:** [https://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/pdf/mulch\\_colored\\_plastic.pdf](https://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/pdf/mulch_colored_plastic.pdf)

**Tomato diseases and disorders** <https://hgic.clemson.edu/factsheet/tomato-diseases-disorders/>

**WSU Hortsense--Tomato problems--view list at left**

<http://hortsense.cahnrs.wsu.edu/Search/MainMenuWithFactSheet.aspx?CategoryId=5&PlantDefId=56>

**Common problems:** [https://mtvernon.wsu.edu/path\\_team/tomato.htm](https://mtvernon.wsu.edu/path_team/tomato.htm)

# Questions?



WSU EXTENSION  
Cowlitz County



Alice Slusher

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For information about becoming a **WSU Extension Master Gardener** in  
**Cowlitz Co.**, contact Gary Fredricks, [garyf@wsu.edu](mailto:garyf@wsu.edu), 360-577-3014 ext. 3



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<http://mastergardener.wsu.edu/>