



# Growing Tomatoes in the Home Garden



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."*

# Help Us Grow!

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



If you prefer not to receive the follow up survey from the Statewide Master Gardener Program, please put your name and email address into the chat.

# Today's Topics

- Plant selection & Grafted tomatoes
- Site selection, planting, containers
- Growing and cultivation
- Problems
- Resources
- Harvest and storage

# Plant Selection--Choosing



# Plant Selection

- Seeds versus plants
- Determinate or indeterminate
- Open Pollinated or hybrid
- Grafted?
- How much space
- Newcomers and Old favorites

# What do you need to know?

## TOMATO POLE *Principe Borghese* *Lycopersicon lycopersicum*

\$1.89  
30 seeds

**WARM SEASON**  
**75 DAYS from**  
**transplanting**  
after last chance  
of spring frost  
Indeterminate type

*The traditional  
variety for  
luscious, sun  
dried or oven  
roasted gems,  
tangy and  
sweet.  
Heavy yields,  
excellent  
storage.*



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INTERESTS®

PEEL BACK FLAPS  
MORE INFO INSIDE



### TOMATO POLE *Principe Borghese* *Lycopersicon lycopersicum*

**Days to Emerge:**  
5 - 10 Days

**Seed Depth:**  
1/8"

**Seed Spacing:**  
A group of 3 seeds  
every 24"

**Row Spacing:**  
3'

**Thinning:**  
When 2" tall, thin  
to 1 every 24"

*Illustrated by  
Marjorie Leggitt*

This small, fragrant tomato can be found all over backyards and farmyards in Italy, drying right on the vine, or hanging from barn rafters where the dried fruits last into the winter months. Small, plum shaped tomatoes are set in clusters of 6 to 8 fruits on prolific plants. They can be dried on the plant or in a vegetable dehydrator, and are also outstanding when oven roasted. *This packet plants approximately 24 plants when started indoors.*

**When to sow outside:** Recommended for mild winter climates only: 1 to 2 weeks before average last frost and when soil temperatures are at least 60° F.

**When to start inside:** RECOMMENDED. 6 to 8 weeks before average last frost.

★ **ALL OUR SEEDS  
ARE UNTREATED** **NO  
GMOs**

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Broomfield, Colorado 80020  
www.botanicalinterests.com

Lot# 20749 Packed for 2017  
Sell by 12/31/2017



# Heirloom (open-pollinated)





# Hybrid tomato



## Tomato Disease Resistance Codes

Early Blight	EB
Late Blight	LB
Fusarium Wilt	F, F1, F2, F3
Verticillium Wilt	V
Nematodes	N

# How Much Space?



# Space Requirements

Indeterminate



# Space Requirements

Determinate



# Grafted Tomatoes

- What is a grafted tomato plant?
- Why purchase a grafted tomato?
  - Higher yields
  - Improved resistance
  - Stronger growth
  - Larger fruit
  - Longer harvest period

Where can I get one?

How much does it cost?

# Grafted Tomato Roots



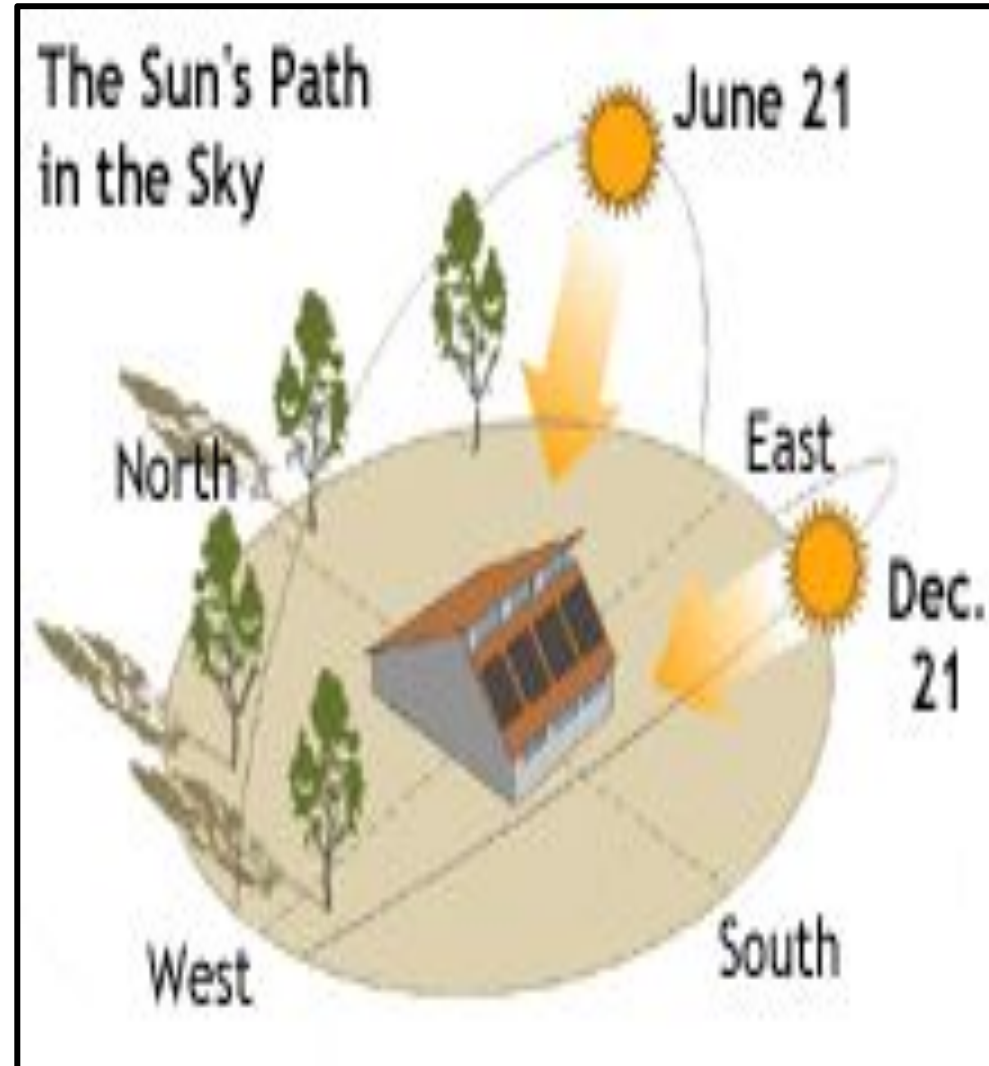
# Site Preparation

- Sun
- Water
- Soil preparation
- Crop rotation



# Sunlight

**Full Sun** - 8 hours  
**Shade** - know  
where it will occur.

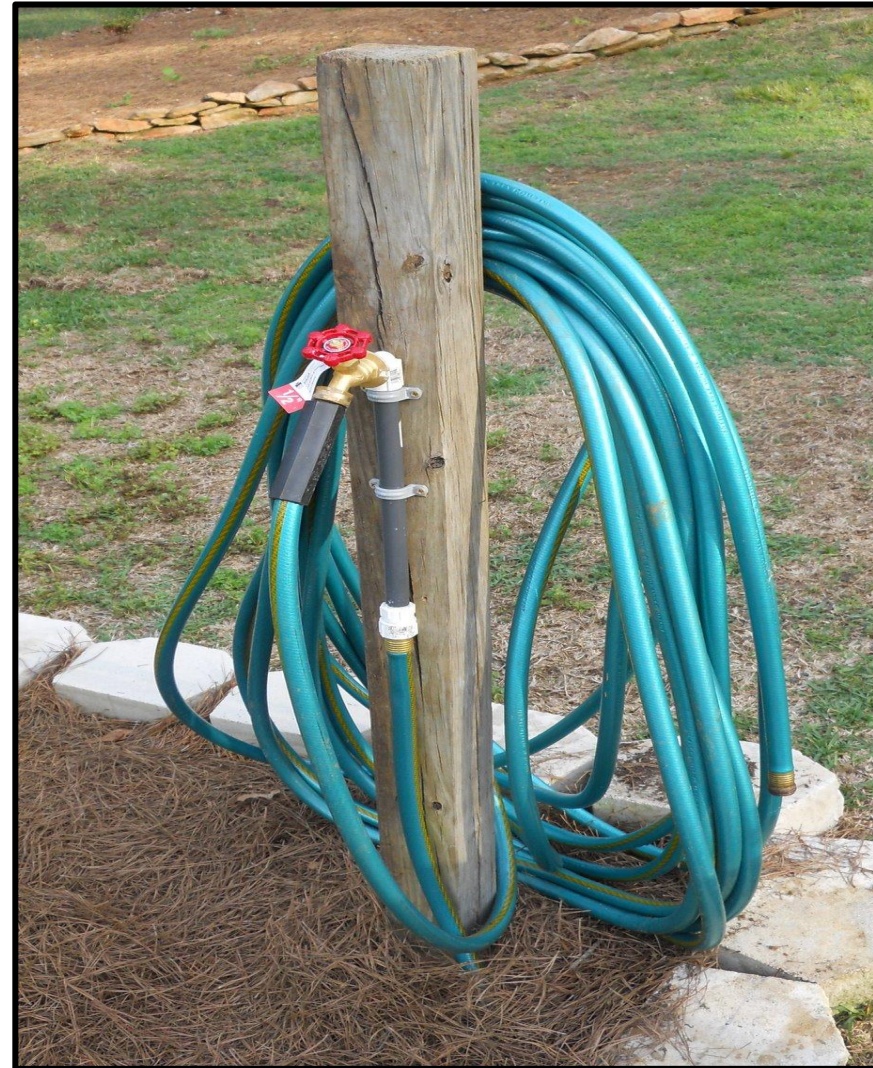


# Water needs

Soil Condition  
(sandy, clay, loam)

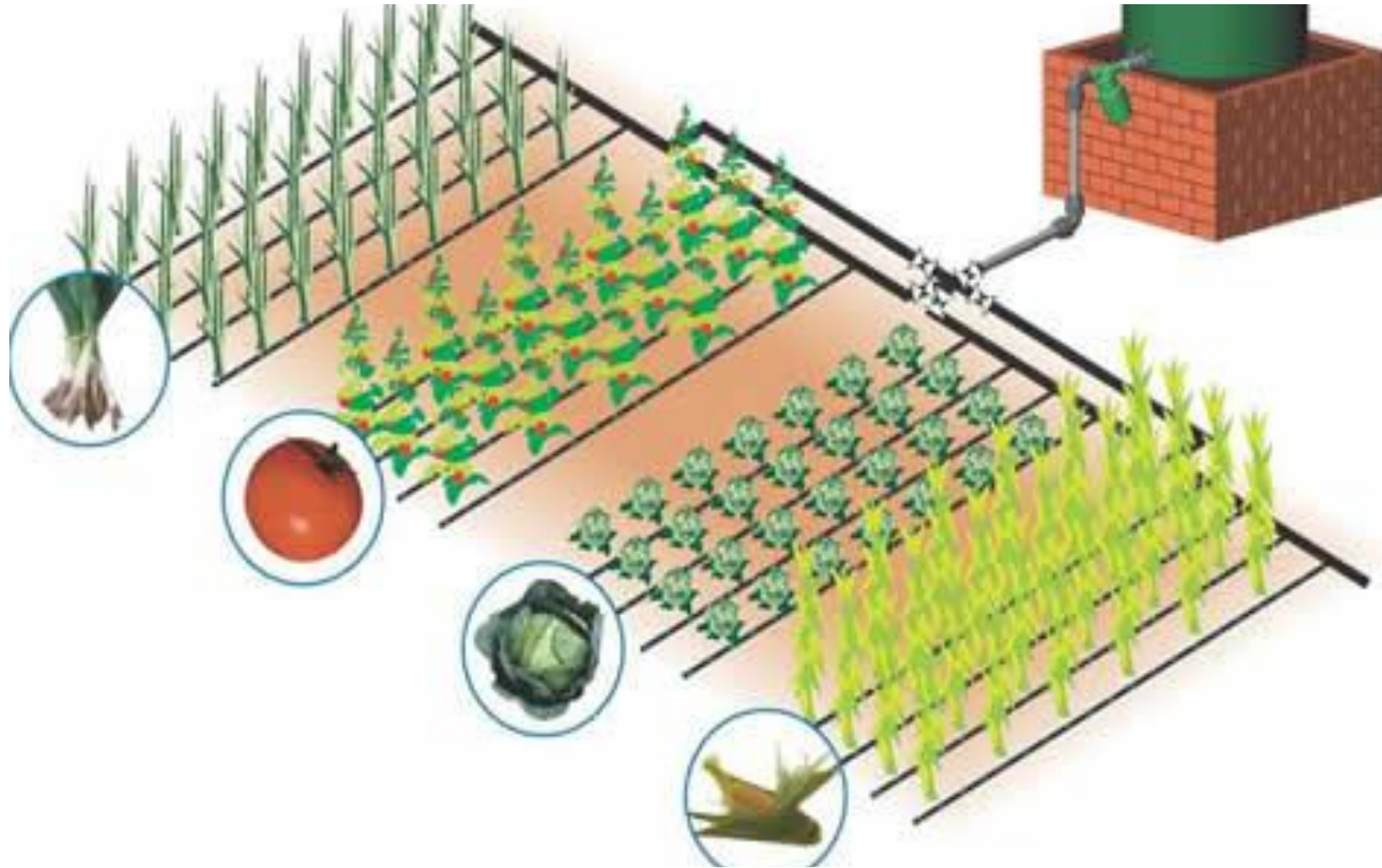
Weather and wind

Ambient  
temperature and  
pollination



Water tomatoes regularly and deeply.

# Install Drip Irrigation by Zones



# Soil Preparation

- 1. Do no harm. Avoid compaction.
- 2. Avoid chemical/synthetic fertilizer, but do use a low nitrogen fertilizer that includes phosphorus.
- 3. Remove all weeds.
- 4. Add organic matter/compost.

# Fertilizer

Substance added to soil to provide plants with essential macro and micronutrients.

N, P, and K are macronutrients. N(itrogen)  
P(hosphorus) and K(Potassium)

Balanced means the three numbers on the front of the bag/box are the same  
Could be 3-3-3, 10-10-10.



# Fertilizing Tomatoes at Time of Planting

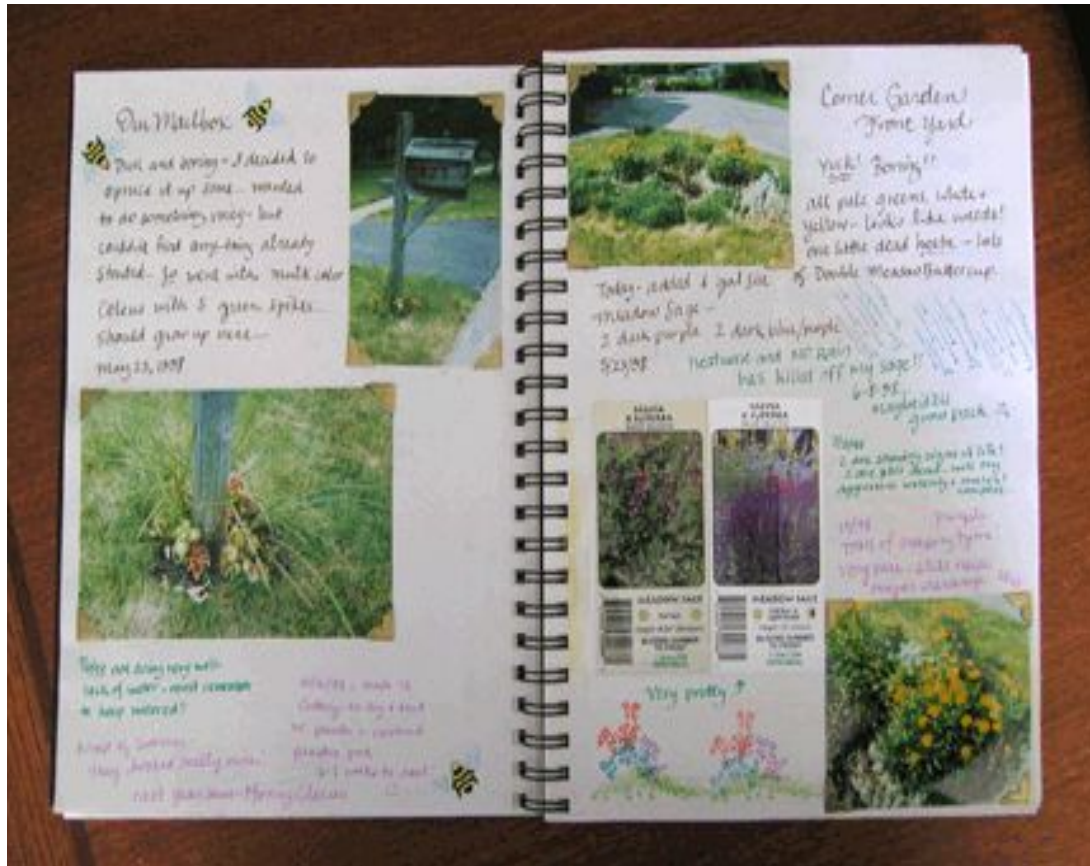
Look for a fertilizer that is formulated for tomatoes and/or vegetables.

Don't add lots of nitrogen at this stage of growth; Phosphorus is more important at planting.

Follow directions for packaged fertilizers.

What about calcium?

# Recordkeeping/Crop Rotation



Crop rotation simply means avoiding planting the same crop (or a related one) in the same soil over and over again. Tomatoes are in the same plant family as potatoes, eggplant, peppers and tomatillos.

# Crop Rotation: Plant Families

## **Tomato/potato family**

***(Solanaceae):***

Tomatoes, Potatoes,  
Peppers, Eggplant

Largely warm season crops

## **Squash Family**

***(Cucurbitaceae):***

Melons, Cucumbers,  
Squash, Gourds

Largely warm season crops

## **Mustard Family *(Brassicaceae):***

Broccoli, Cabbage, Kohlrabi,  
Cauliflower, Kale, Radish,  
Mustard, Rutabaga, Pak Choi,  
Bok Choi, Arugula

Largely cool season crops

## **Legumes *(Fabaceae):***

Peas and Beans

Some warm season, some cool season



# Crop Rotation: More Plant Families

## **Alliums (*Liliaceae*):**

Onions, Leeks, Chives, Garlic,  
Shallots

Technically cool season crops, grow here year  
round.

## **Goosefoot Family**

**(*Chenopodiaceae*):**

Spinach, Beets, Chard

Largely cool season crops

## **Sunflower Family (*Asteraceae*):**

Sunflowers, Lettuce, Endive,  
Radicchio, Escarole

Some are cool season, some are warm.

## **Carrot Family (*Apiaceae*):**

Carrots, Celery, Dill, Parsley,  
Cilantro

Some warm, some cool.



**When is a good  
time to plant  
tomatoes?**

# After the Last Frost Date

Probability of  
frost in the  
spring:

50% - Feb 22<sup>nd</sup>

10% - April 6th



# When the Soil Is Warm Enough

Day >60 degrees

Night >50 degrees



## When Night Temps are $>50^{\circ}$

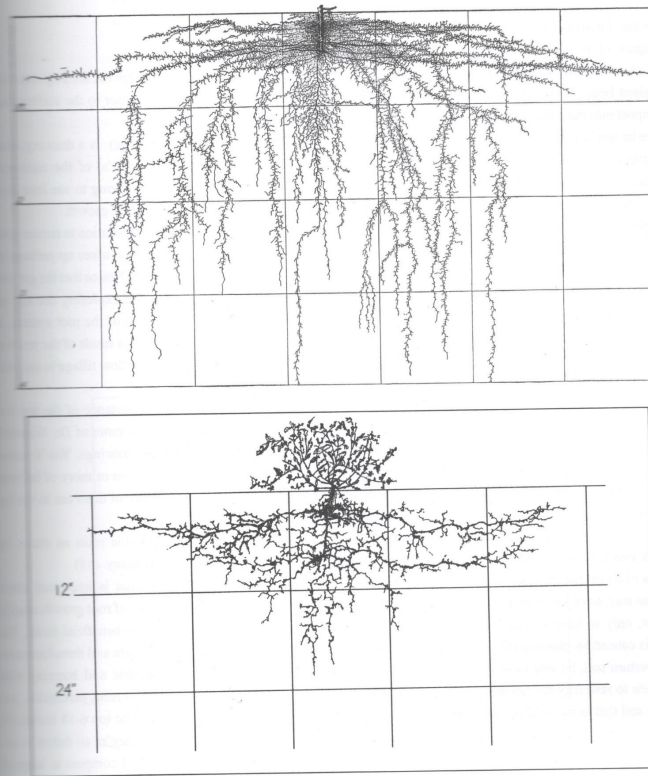
Warm season crops, like tomatoes, grow best at daytime temperatures of  $65^{\circ}$  to  $95^{\circ}$ . They are damaged or killed by frost.

In contrast, cool season vegetables thrive at  $55^{\circ}$  to  $75^{\circ}$ , tolerate frost and are sometimes improved by it.

# Selecting Seedlings

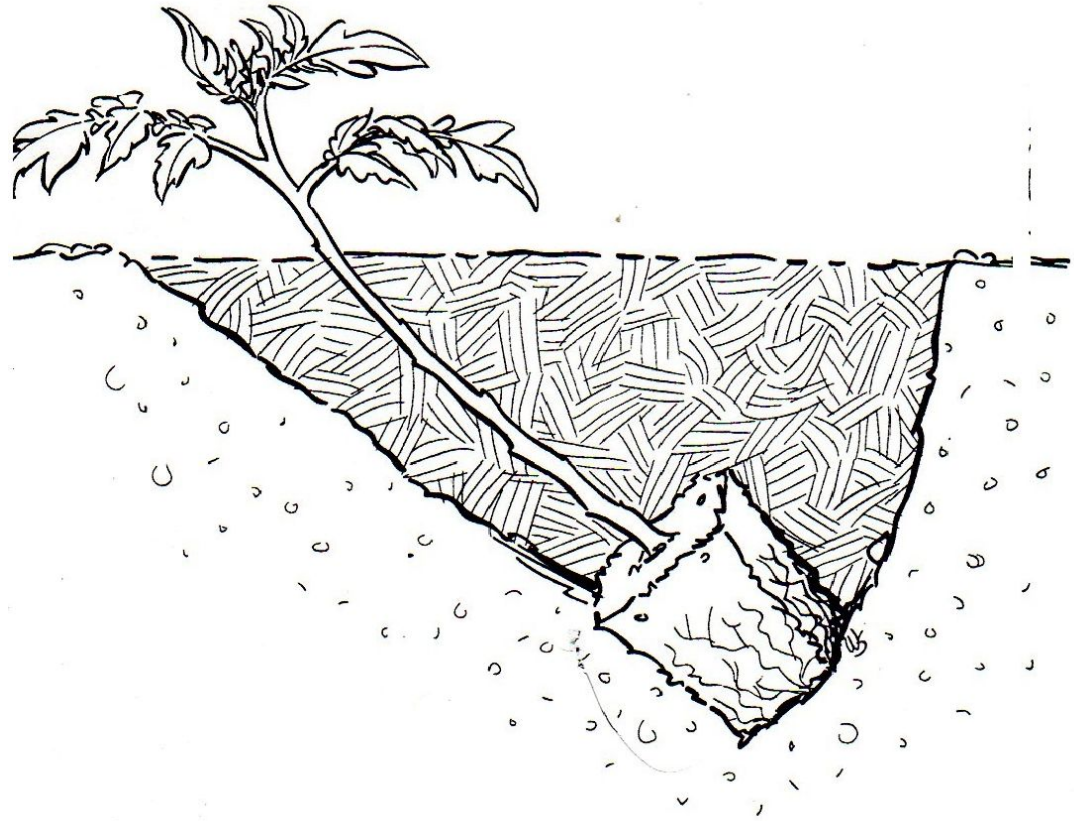


# Plant Deeply



**Figures 75 and 76:** Two views of a tomato plant. The upper one is from Dr. John Weaver's work in Nebraska in the 1930s. The lower one is based on a drawing from *Wurzelatlas der Kulturpflanzen gemäßiger Gebiete mit Arten des Feldgemüsebaues*. In both cases the majority of the roots are in the top foot of the soil. Notice if you had a raised bed 24 inches high you would provide soil for a huge majority of the roots. (And there'll be less stress for those with an aging, baby-boomer back! Alas, I'm one.) Notice the upper root drawing shows what happens when you plant deep to help the stem form roots. Squares are one square foot.

# Even Sideways



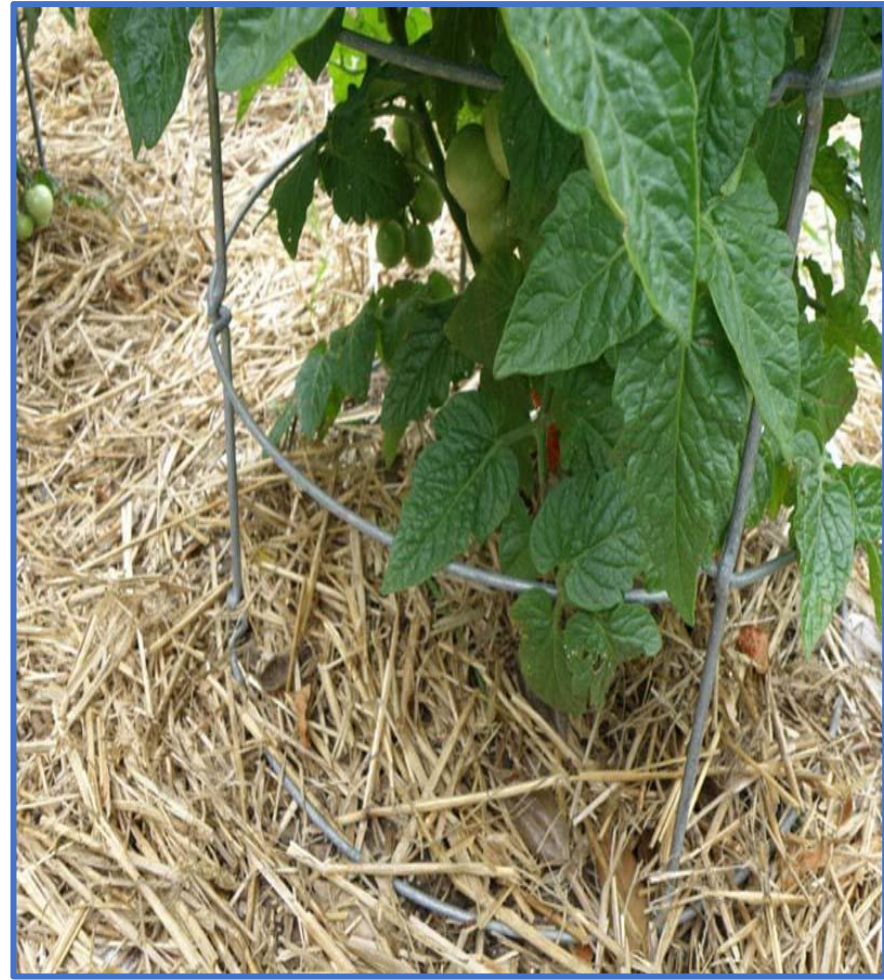
**Figure 1.** Set tall, lanky tomato plants horizontally into the soil with just a few leaves above the ground.



# Water It In



**Mulch!.....  
saves water.....reduces weeds**



# Planting Summary

- Plant at the right time
- Remove any blossoms or fruit.
- Set up support at time of planting!
- Use a fertilizer proportionately lower in nitrogen and higher in phosphorus.
- Plant deeply, at least up to the first true leaves and possibly above.
- Water in.
- Mulch.

# Diversity Planting

Interplanting other vegetables with tomatoes may provide:

- Protective barrier
- Disease suppression
- Attraction of beneficial or repellent of harmful insects
- Weed suppression

# Planting in Containers

Use a large container, minimum 14” diameter (20” better).

Choose a tomato bred for container growing, usually a determinate type.

Use a good quality potting soil mix.

Water more frequently, fertilize regularly.



# Growing & Cultivation

- Water regularly and deeply.
- Use a mulch.
- Support the vines.
- Fertilize during the growing season.
- Prune and/or pinch.

# Support: Cages



# Support: Rebar Cage





# Support: Wooden Options



# Other Support Options



# Support: Even Strings



# Fertilizing Tomatoes during the season

When fruit has set, start supplemental fertilizing.

Use a balanced fertilizer formulated for vegetables.

Water it in.

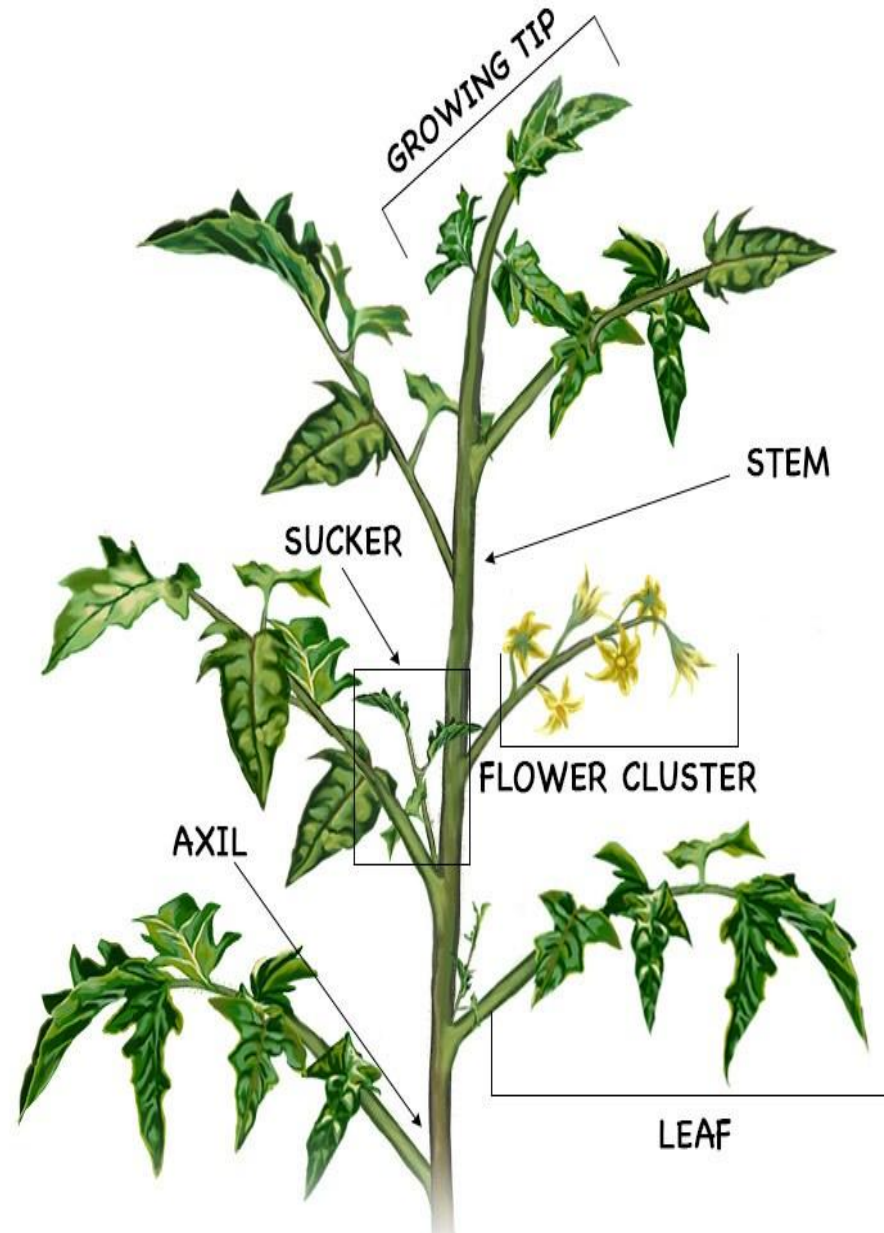
You can also use liquid forms.



# Pruning is an option (aka “pinching”)

Pinch off shoots or “suckers.”

Pinch off tip of main stem above the top blossom.



# Growing Tips

- Remove the bottom leaves as the plant grows.
- Prune.
- Shake the cage.
- Water regularly, and deeply.
- Protect from frost early in the season.
- Begin secondary fertilizing at fruit set

# Check for Problems

Yellowed  
leaves

Damaged fruit

Insects



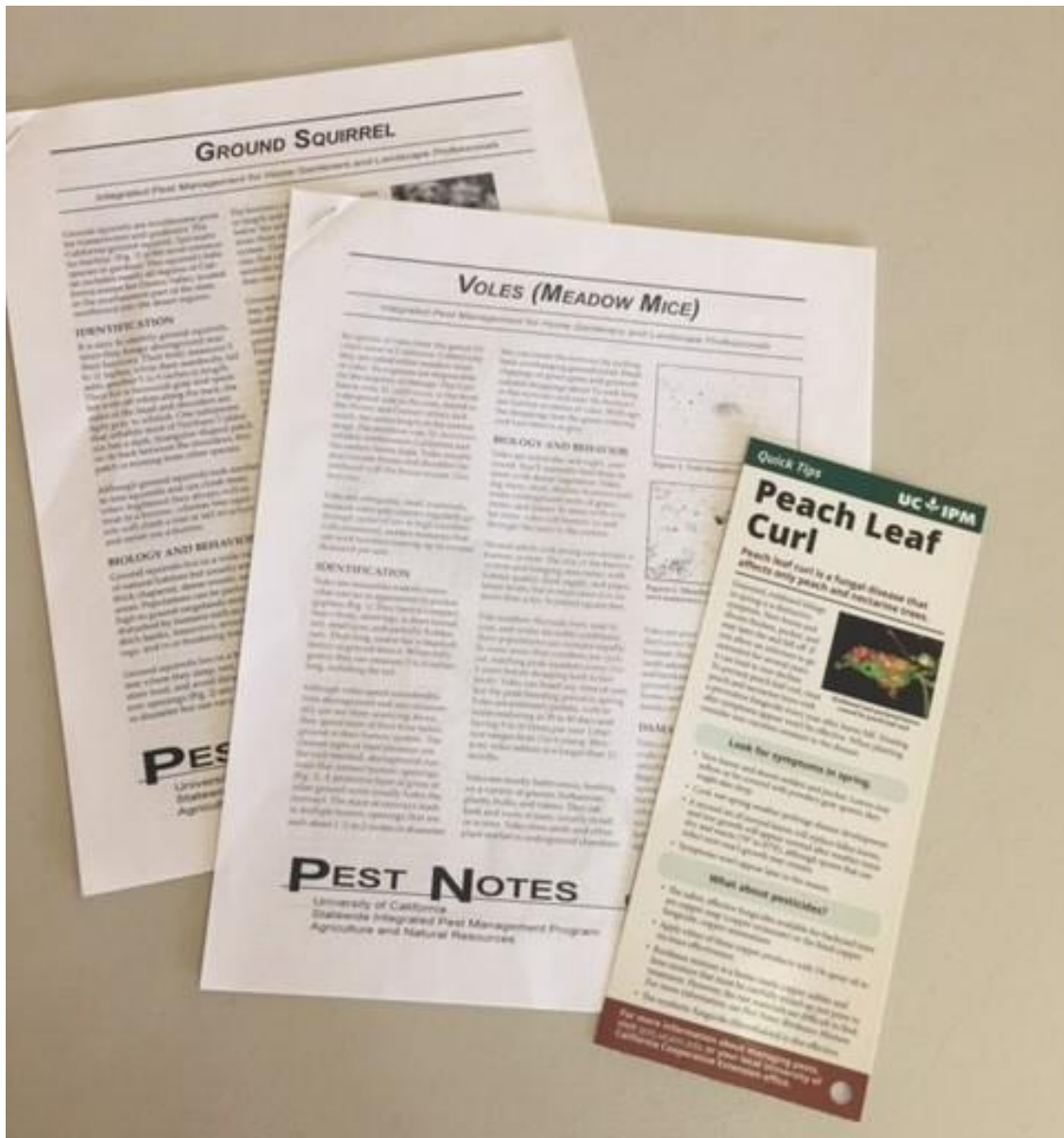
# Integrated Pest Management



## Home, Garden, Turf & Landscape Pests







# Sample Pest Notes and Quick Tips from IPM Website

# Problems

- Diseases: bacteria and fungus
- Invertebrates
- Vertebrate pests
- Environmental disorders

# Bacteria and Fungi

- Black mold
- Curly top virus
- Damping off
- Early blight
- Fusarium wilt
- Late blight
- Phytopthera root rot
- Powdery mildew
- Tobacco mosaic virus
- Tomato spotted wilt virus
- Verticillium wilt
- White mold

# Early Blight (EB)



# Fusarium Wilt (F, F2, F3)



# Late Blight (LB)



# Verticillium Wilt (V)



# Solutions for Wilts

Crop rotation

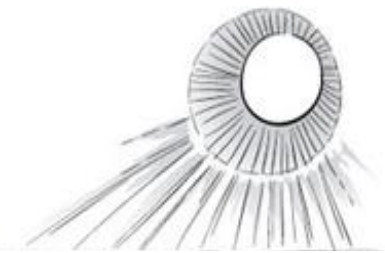
Sanitation

Resistant varieties

Soil solarization

Biofungicides

aka antibiotics





# Invertebrates

- Tomato hornworm
- Stink bugs
- Tomato russet mite
- Thrips
- Slugs and snails . . . .
- . . . . and a whole bunch more!

# Hornworm—3 inches long!



**This is the moth—over 4 inches!**



# Stink bugs



# Tomato russet mite



# Thrips



# Vertebrate Pests

- Deer--can eat the whole plant
- Squirrels, raccoons, opossums, skunks, mice—partially eat the fruit
- Rabbits
- Birds—damage the fruit
- Moles
- Voles
- Gophers—may eat young plants in their entirety or 'air prune' the roots
- **Solution? EXCLUSION**

# Environmental Disorders

- Blossom drop/lack of fruit set
- Blossom end rot
- Catfacing
- Fruit cracks
- Overwatering
- Sunscald
- Tomato leaf roll



# Blossom End Rot



# Catfacing



# Fruit Cracks



# Sun Scald



UC Statewide IPM Project  
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# Tomato leaf roll



# Beware of Overwatering

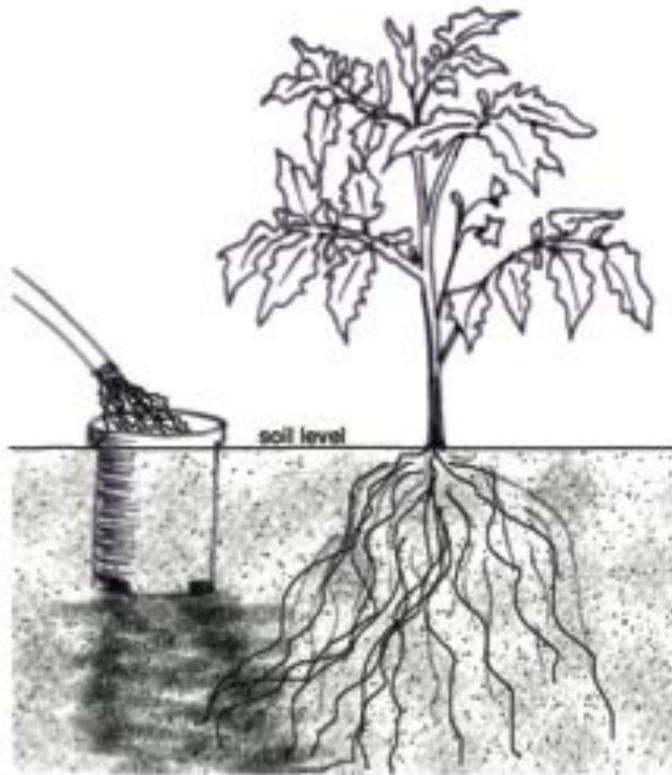
- **Symptoms:**
- Yellowing leaves
- Root rot
- Little or no fruit set on young plants
- Cracks
- Leaf roll
- Large, watery, tasteless tomatoes

# Watering Wand



## But Still . . . .

Water deeply and regularly, and NOT from overhead!





# Harvest and Storage

- When to harvest.
- How to harvest.
- Extending your tomato harvest.
- Ripening green tomatoes.
- Refrigerating tomatoes.
- Storing tomatoes.

# When to Harvest

When the tomato has reached full color. Once ripening begins check progress almost daily.

- Know what was planted so that you're not waiting for an orange tomato to turn red. All of the tomatoes in the photo are ripe.



# How to harvest

Cut or gently twist off the fruits, supporting the vine at the same time to keep from damaging it.



# Extending your Harvest

Know the predicted maturity of each plant.

- Early Girls will mature at around 60 days.
- Black Krim will mature at around 70 to 90 days

Select varieties that ripen at different times, as well as a combination of Determinate ( 1 large crop), and Indeterminate (continual crop until frost)

# How to tell when a green variety tomato is ripe--

Close your eyes, and feel it; if it's soft, it's ripe.

Ripe green tomatoes are sweet, luscious and a little tangy, just like a perfectly ripe red or pink or orange or black or purple tomato.

Taste one!



- Green variety tomatoes may also have a pink or reddish tinge on the blossom end.

# Ripening unripe Tomatoes

- Wrap in newspaper, place in a box and store the box-light is not needed to ripen
- Check the ripening process every few days.
- At season end, pick whitish green tomatoes, store at 70 degrees to ripen
- Place near ethylene gas producing fruit ( ie: banana)

# Storing Tomatoes

Tomatoes should not be stored in a refrigerator.

Refrigerating a tomato affects the smell and texture.

- The tomato loses its characteristic grassy fragrance and the flesh can become grainy.
- Refrigeration, however, does not change the sugar content or acidity.



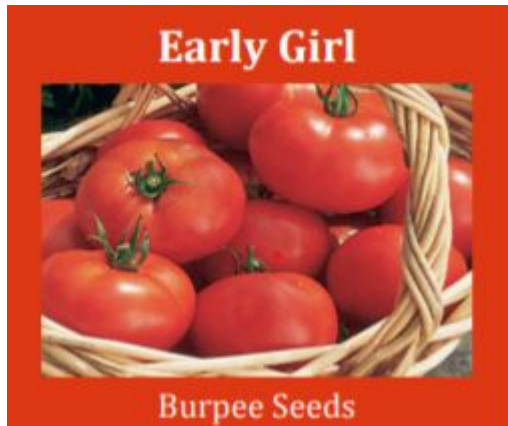
# Storing Tomatoes

- Unless you're planning to store your tomatoes for over a week, a windowsill, counter-top or bowl works fine.
- Tomatoes store better upside down.
- Fresh-picked tomatoes will last longer on the kitchen counter than store-bought ones.





# Old Favorites

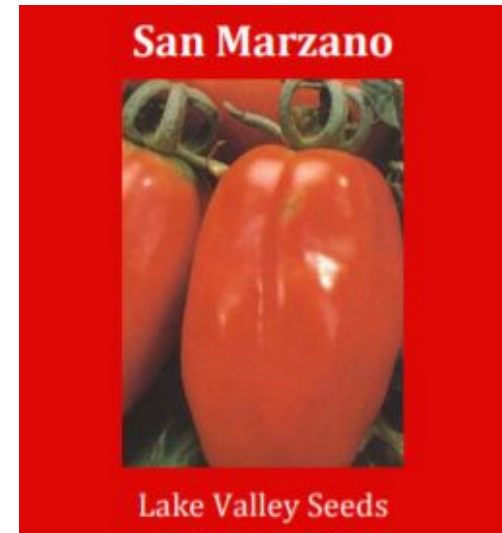
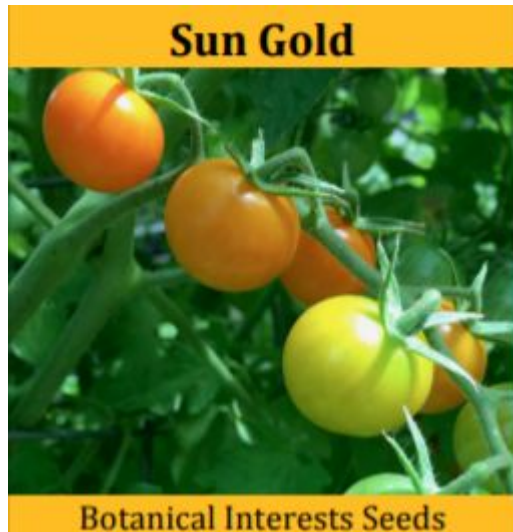
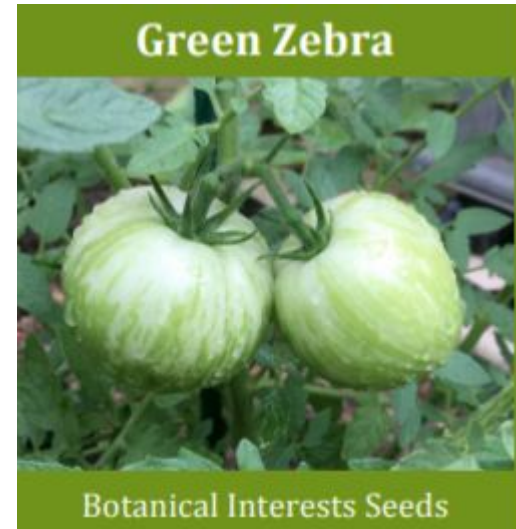


Early Girl/52 days

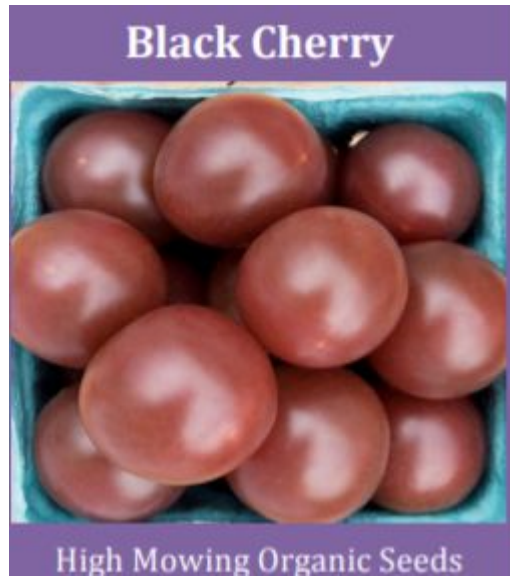
Sun Gold/75 days

Green Zebra/72 days

San Marzano/70 days



# Selected Varieties



Cherry: Black Cherry/64 days

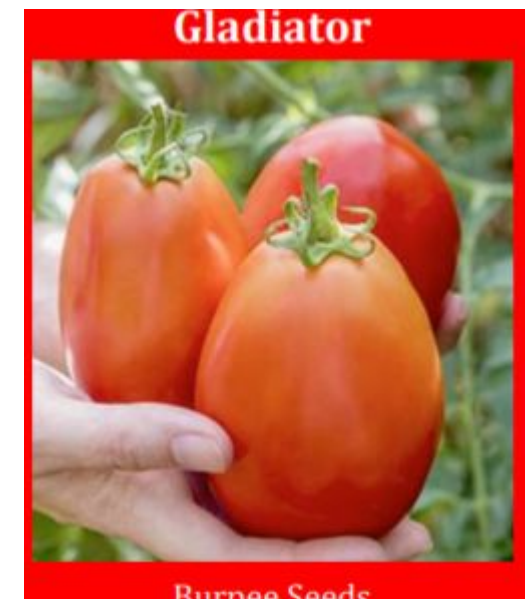
Container: Jaune Flamme/70-80 days



Standard: Cherokee Purple/72 days



Paste: Gladiator/72



# Questions?

Thank you!



# Selected Resources

**UC IPM for tomatoes** <http://ipm.ucanr.edu/home-and-landscape/tomato/index.html>

**Growing Tomatoes in the Home Garden:**

<https://ucanr.edu/repository/fileaccess.cfm?article=54222&p=%20ZKXKHX>

**Healthy Garden Tip: Crop Rotation:** <https://ucanr.edu/sites/ucmgnapa/files/254803.pdf>

**Plant Rotation in the Garden Based upon Plant Families:**

<https://extension.psu.edu/plant-rotation-in-the-garden-based-on-plant-families>

**Soil Solarization for Gardens and Landscapes:**

<http://ipm.ucanr.edu/PMG/PESTNOTES/pn74145.html>