

## Growing Tomatoes in the Home Garden March 20, 2022

## UC Master Gardeners of Napa County http://napamg.ucanr.edul

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

- Site selection, planting, containers
- Growing and cultivation

Hands on activity: transplanting

- Problems
- Resources
- Harvest and storage


## Plant Selection-Choosing a Variety



## Plant Selection Considerations

- Seeds versus plants
-Determinate or indeterminate
- Open Pollinated or hybrid
- How much space


## What do you need to know?





## Heirloom (open-pollinated)



## Hybrid tomato



| \#5979 See photo at www.reneesgarden.com |  |  |
| :---: | :---: | :---: |
| Inca Jewels Contais |  |  |
|  |  <br> These delicious "Roma" style container comatoes are bred for extra-heavy yields on space-saving 3 ft. planes. Ideal to grow in large pots or in smaller garden spaces. You'll have an abundance of plump fruits bursting with juicy | Equmakilicar + liewtirper inum por vile - 20 indies in 13 Inchen bigh. inguex to pers1 dovespe. Wher iners may need not weather other week wht fertiliser for nd good yelde. |
|  | flaver, delicious right from the garden or made into rich. thick, homemade sauce. Perfect to eat fresh; make sauce or grill; to put up in jars: or just freeze the tomatoes whole in bags to defrost and make sauce as needed at a later date. | lotes <br> 1 tevenal leches bey wereln tronide areng nil whe cegr seas plaragot th friver and Mulch to presure resension er ance fruit $n$ |
|  | Kences Uarten* smap | Afoton Ca ssol wreneengudenco |
|  | Net Wt. 50 mg \$3.19 | 3.49 CAN |

## Tomato Disease Resistance Codes

Early Blight ..... EB
Late BlightLB
Fusarium Wilt ..... F, F1, F2, F3Verticillium WiltNematodesN

## How Much Space?



## Space Requirements

Indeterminate


## Space Requirements Determinate



## 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.
$\mathrm{N}, \mathrm{P}$, 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): <br> Tomatoes, Potatoes, Peppers, Eggplant <br> Largely warm season crops 

Squash Family
(Cucurbitaceae):
Melons, Cucumbers, Squash, Gourds

Largely warm season crops

Legumes (Fabaceae):
Peas and Beans

Some warm season, some cool season

Mustard Family (Brassicaceae):
Broccoli, Cabbage, Kohlrabi, Cauliflower, Kale, Radish, Mustard, Rutabaga, Pak Choi, Bok Choi, Arugula

Largely cool season crops

## Crop Rotation: More Plant Families

| Alliums (Liliaceae): | Goosefoot Family <br> (Chenopodiaceae): |
| :---: | :---: |
| Onions, Leeks, Chives, Garlic, | Spinach, Beets, Chard <br> Largely cool season crops |
| Technically cool season crops, grow here year <br> round. | Carrot Family (Apiaceae): |
| Sunflower Family (Asteraceae): <br> Sunflowers, Lettuce, Endive, <br> Radicchio, Escarole <br> Some are cool season, some are warm. | Celery, Dill, Parsley, <br> Some warm, some cool. |



## When is a good time to plant tomatoes?

## After the Last Frost Date

Probability of frost in the spring:<br>$50 \%-$ Feb $22^{\text {nd }}$<br>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 nska in the 1930s. The lower one is based on a drawing from Wurrelatlas der Kulturpflamzen gemäigiter tivere mit Arten des Feldgemissebaues. In both cases the majority of the roots are in the top foot of the 2. Notice if you had a raised bed 24 inches high you would provide soil for a huge majority of the roots. tas there II be less stress for those wift an agng, thaby-bel 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



## But Still. . . .



# Water deeply and regularly, and NOT from overhead! 



## 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.


## Planting in Containers

Use a large container, minimum 14" diameter ( $20^{\prime \prime}$ 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.
-Water regularly, and deeply.
- Protect from frost early in the season.
- Begin secondary fertilizing at fruit set


## Let's take a break and plant some tomatoes.



## Check for Problems

Yellowed<br>leaves

Damaged fruit


Insects

## Problems

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


## Integrated Pest Management

## university of california agriculture \& natural resources <br> 

Statewide Integrated Pest Management Program
Home, Garden, Turf \& Landscape Pests



## Sample Pest Notes and Quick Tips from IPM Website

## Bacteria and Fungi

- Black mold
- Curly top virus
- Damping off
- Early blight
- Fusarium wilt
- Late blight
- Phytopthera root rot


## 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

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


## Environmental Disorders

- Blossom end rot
- Catfacing
- Fruit cracks
- Sunscald
-Tomato leaf roll
- Overwatering


## Blossom End Rot



## Catfacing



## Fruit Cracks



## Sun Scald



## 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


## 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.


## Know the Maturity Date

- 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 harvest

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


## 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.

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

Taste one!

## 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.




Sun Gold/75 days
Bloody Butcher/55 days
Super San Marzano/70 days



## Selected Varieties

## Black Cherry/64 days

Gardeners Delight / 65 days

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=\ ZKXKHX

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


Strong Healthy Plants \$5 Each
Grown locally by the UC Master Gardeners of Napa County

## Online Tomato Sale

Click here to order starting

## April 3 at 7am

through 7pm or until sold out*
Credit cards only
Pick-up for plants will be Thursday, April 7
from 9am-3pm and 5-6:30pm
at 1710 Soscol Avenue, Napa

## In-Person Tomato Sale

April 9 10am-1pm*
Or until sold out*
1710 Soscol Avenue, Napa
(close to Central Valley Hardware)
Cash \& check only
Make checks payable to UC Regents Bring your own box

