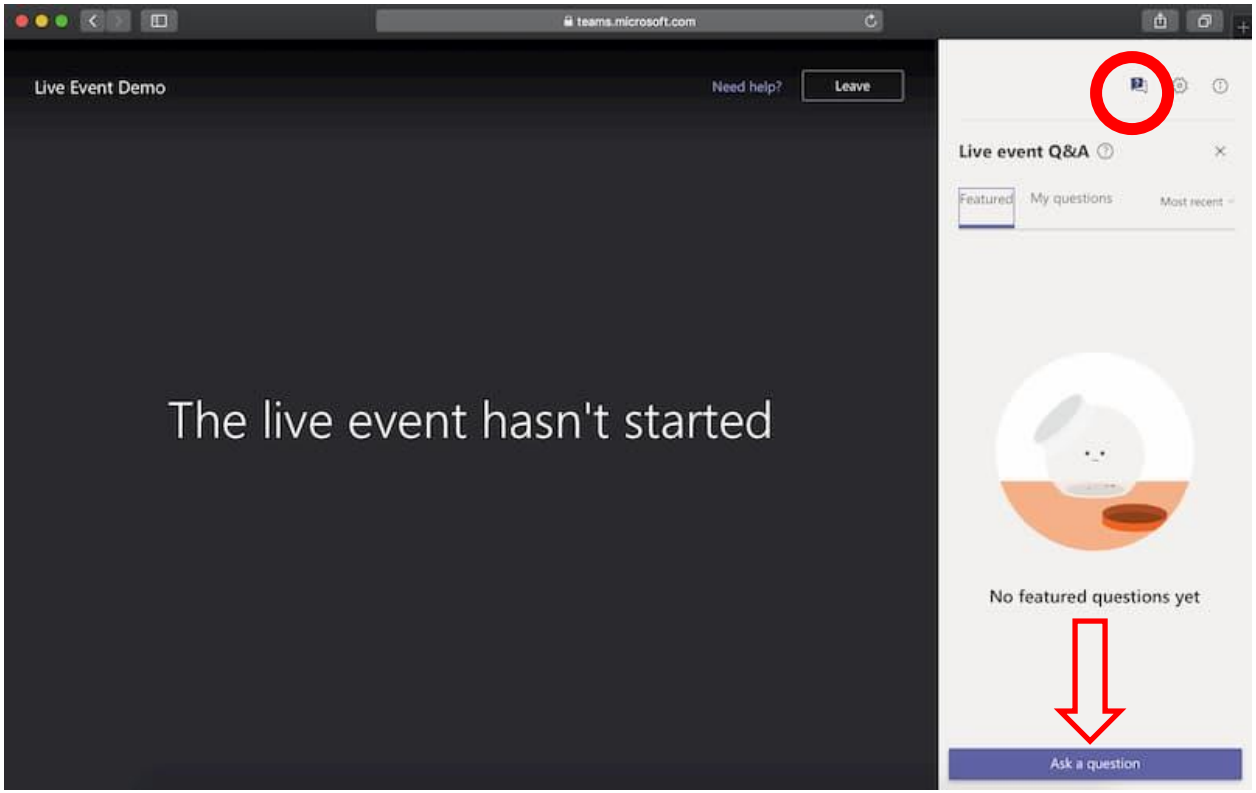
Totally Tomatoes

From Seed to Seed

Placer County Master Gardeners

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Asking Questions



University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Totally Tomatoes

From Seed to Seed

Placer County Master Gardeners

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Who Are Master Gardeners?

Master Gardeners of Placer County

- Extend research-based, sustainable gardening and composting information
- Present accurate, impartial information to home gardeners
- Encourage public to make informed gardening decisions

Who Are Master Gardeners?

Where to find us…

Online, in the Media, and Special Publications

- Hotline: Call **(530) 889-7388** or submit your questions online
- Website: pcmg.ucanr.org
- Facebook, Twitter, Instagram
- Gold Country Media monthly column
- *Curious Gardener quarterly* newsletter, subscribe on website
- *Gardening Guide and Calendar*
- *School and Community garden consulting*

Tomato

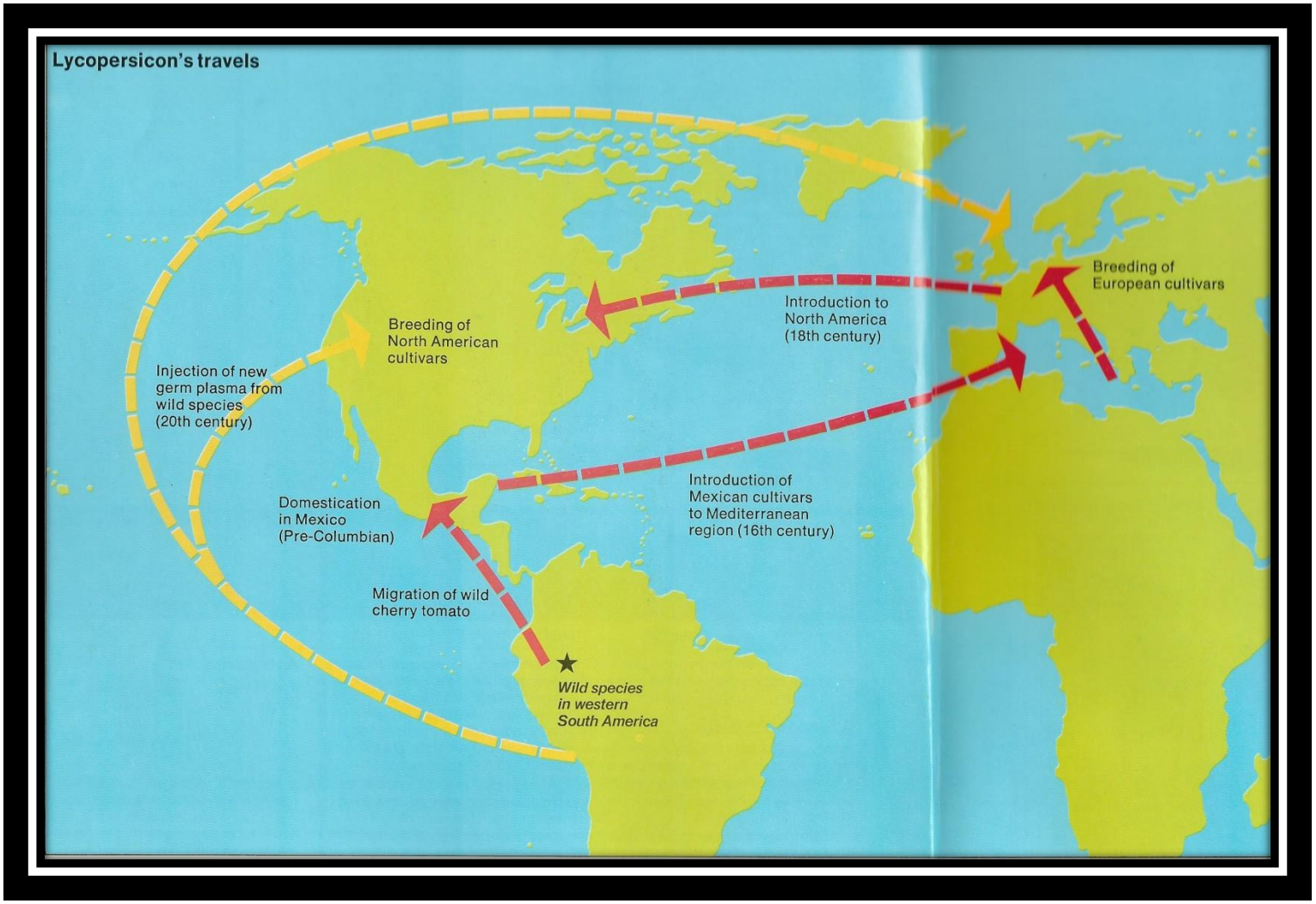
Nightshade Family of Plants: *Solanaceae* (Peppers, Potato, Eggplant)

Originally know as “love-apple” plant.

Originally thought to be poisonous.

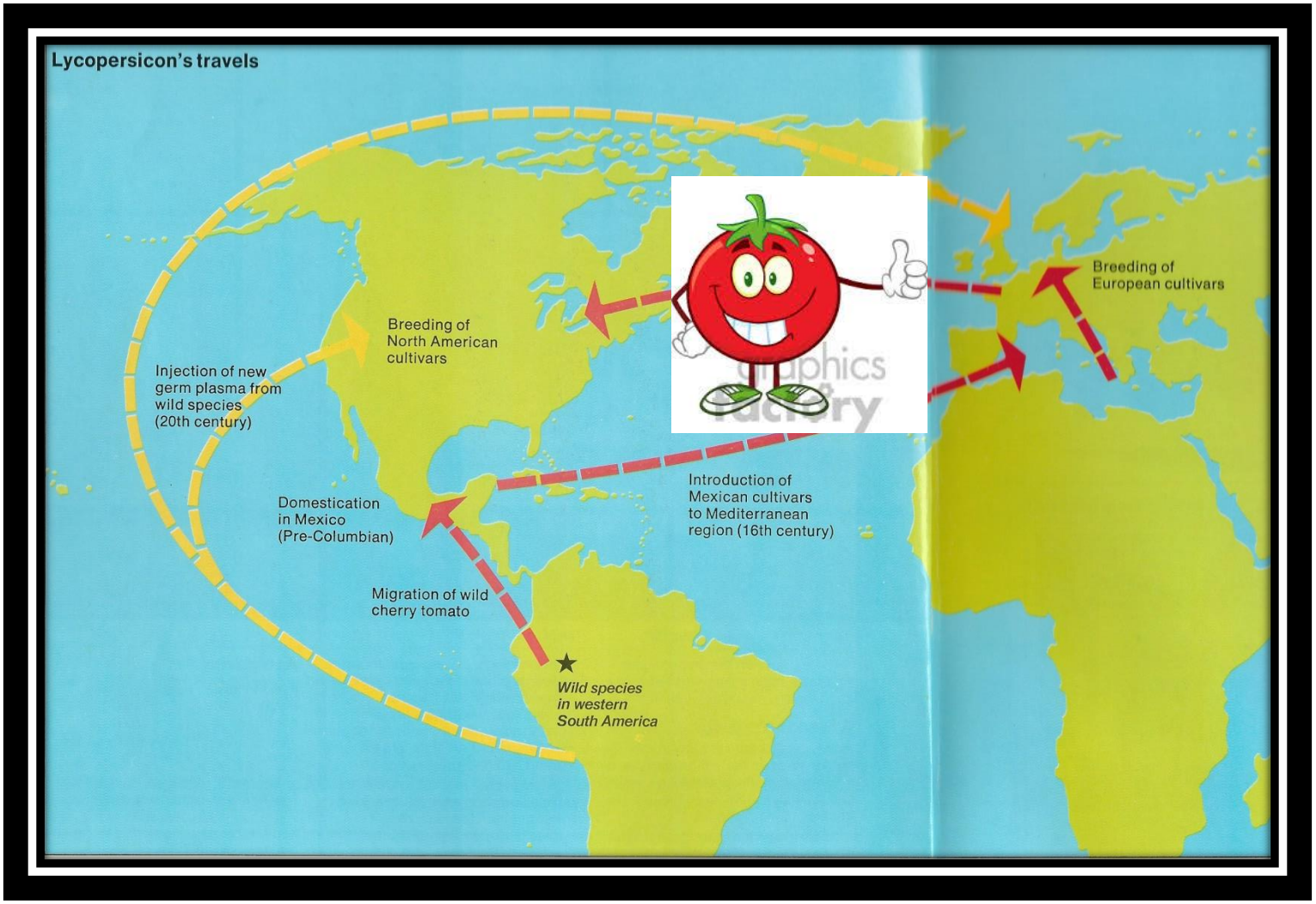
Edible fruit although labeled as a vegetable.

Lycopersicon – World Traveler

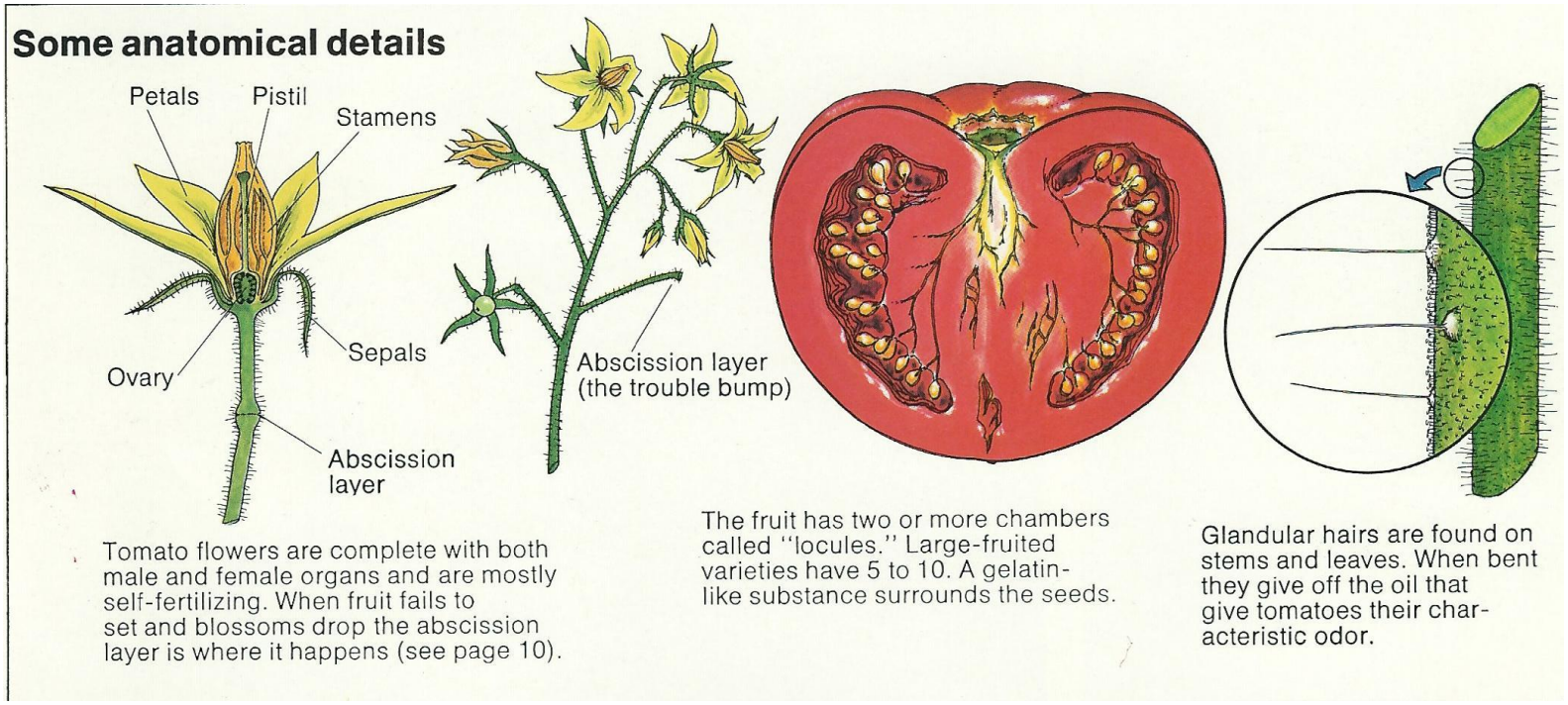


University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Finally Accepted



Anatomy of a Tomato



University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Heirloom vs. Open Pollinated vs. Hybrid What's Going On?

Open pollinated or Standard

- ❖ True to type
- ❖ Reproduces itself from seed

Heirloom (always open pollinated)

- ❖ Introduced more than 50 years ago
- ❖ Must have a history of its own

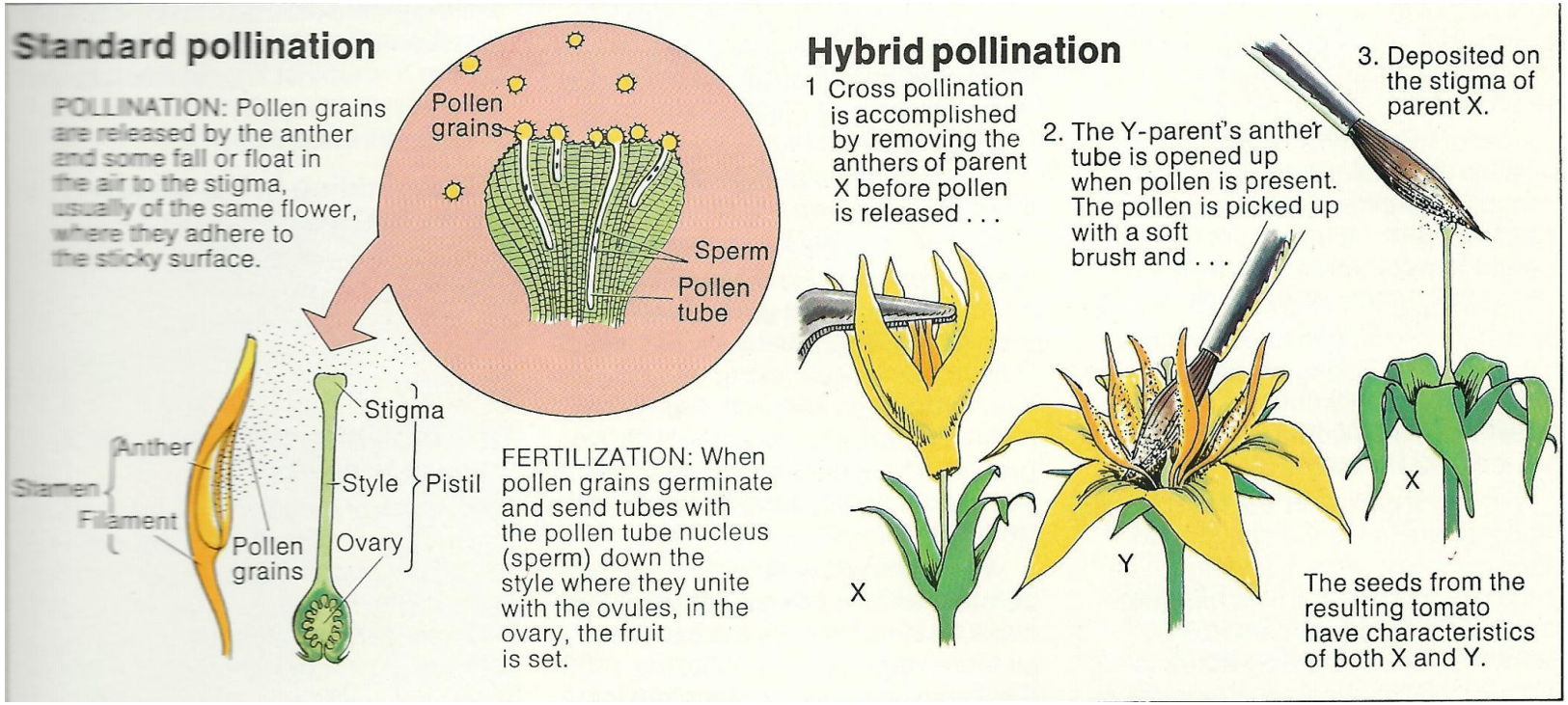
Hybrid

- ❖ Cross-bred by human intervention
- ❖ Not true to type
- ❖ Bred for specific improvements

World Record Tomato 7 lbs 12 oz

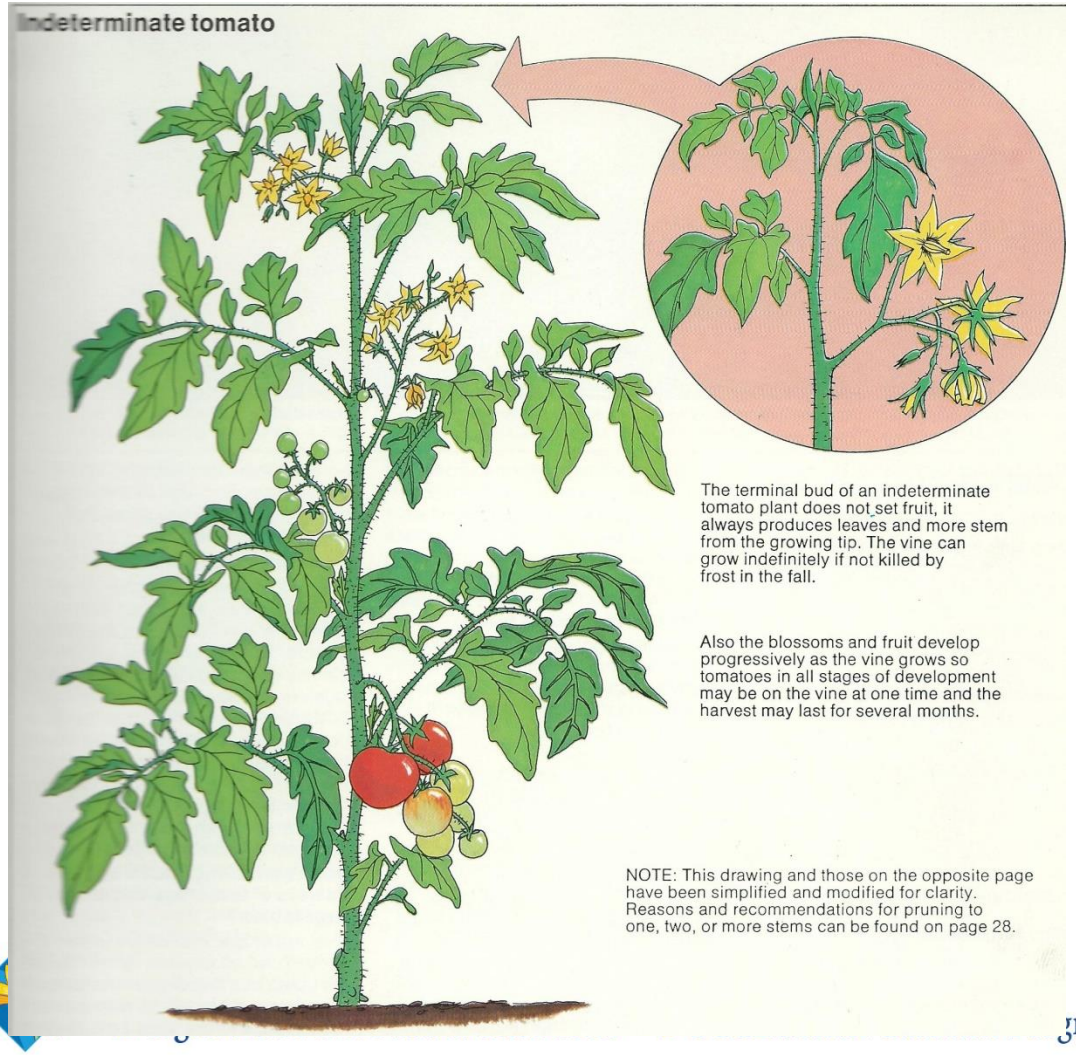
My record is 2.1 lbs

Open vs. Hybrid Pollination

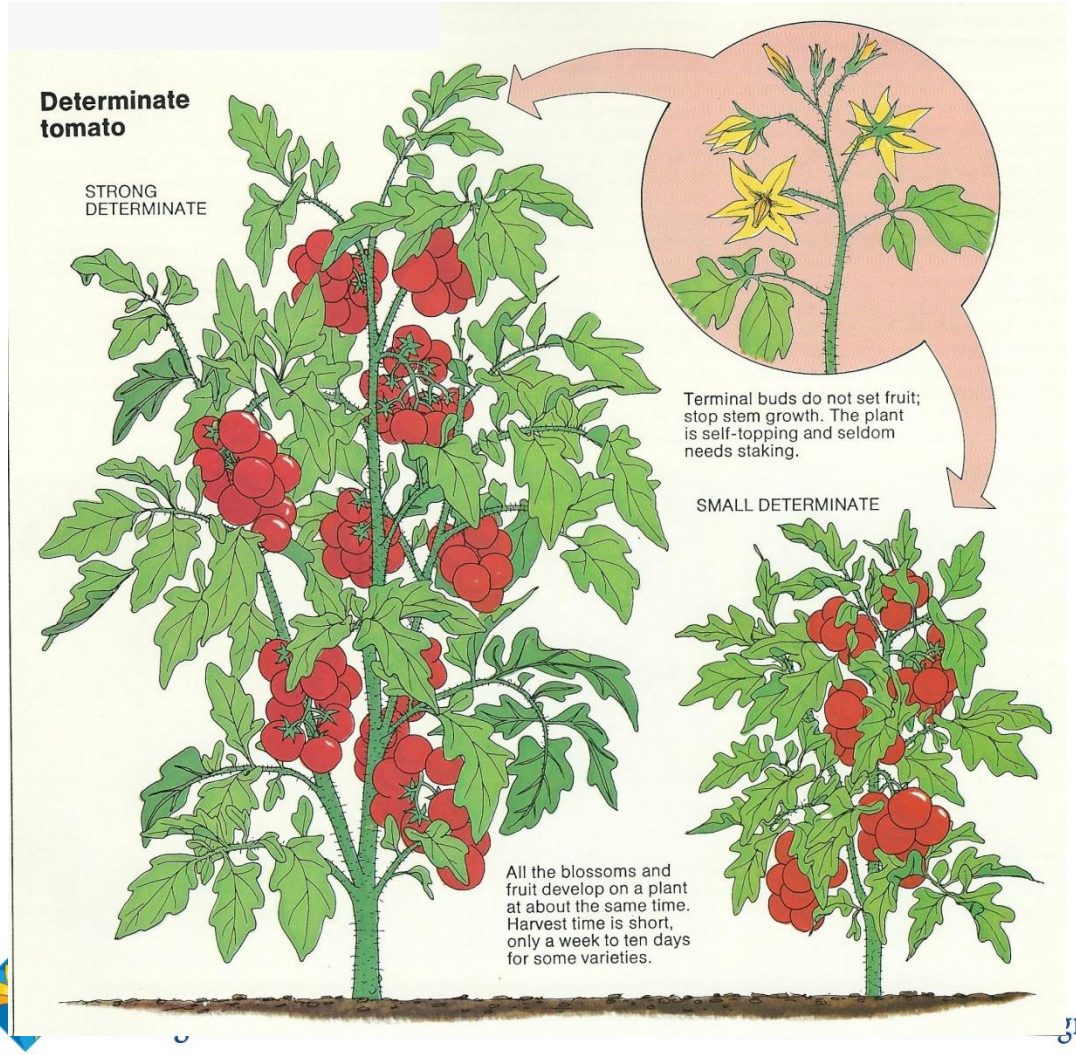


University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Determinate vs. Indeterminate



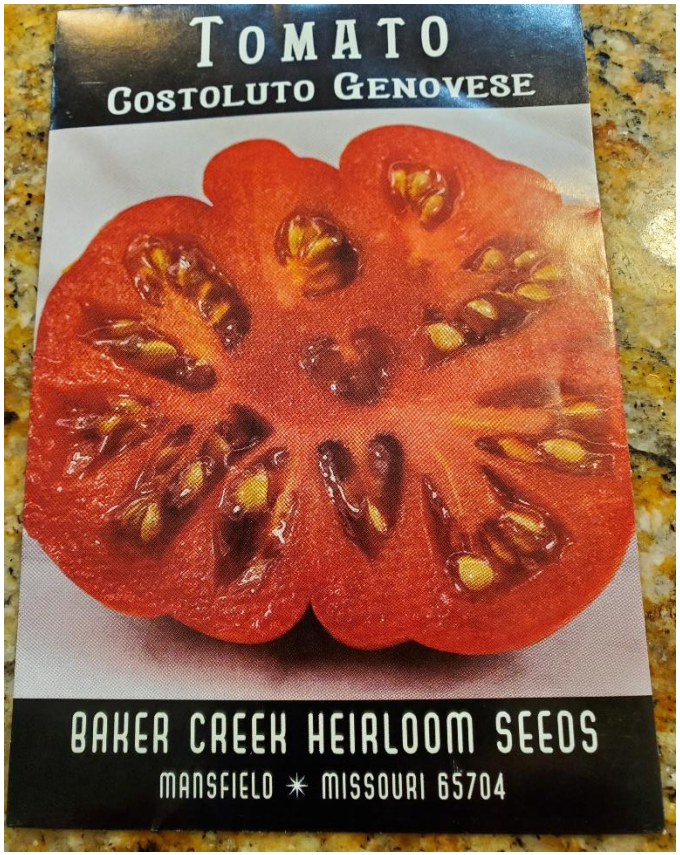
Determinate vs. Indeterminate



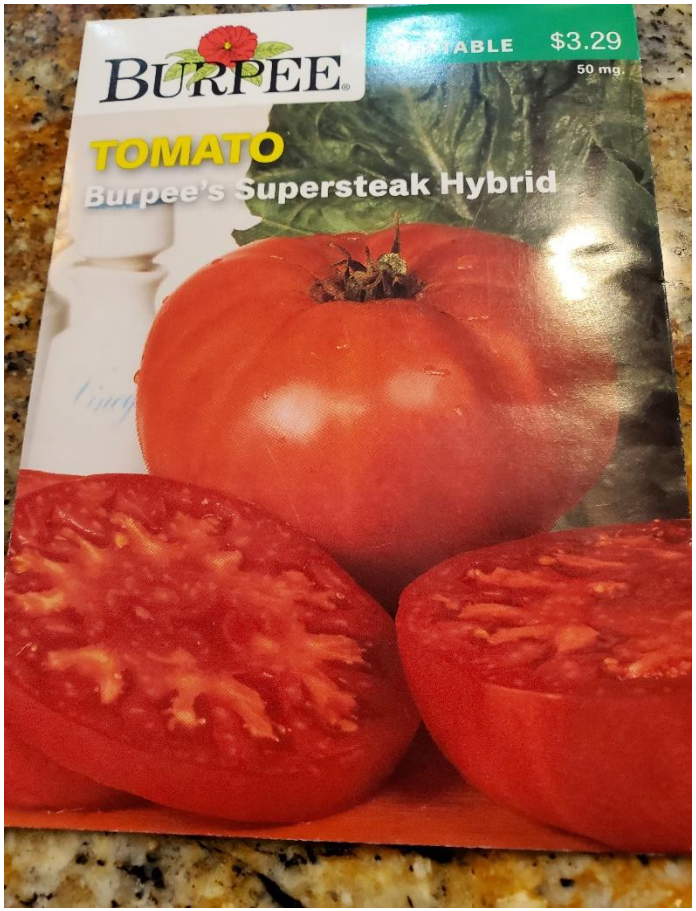
Starting from Seed

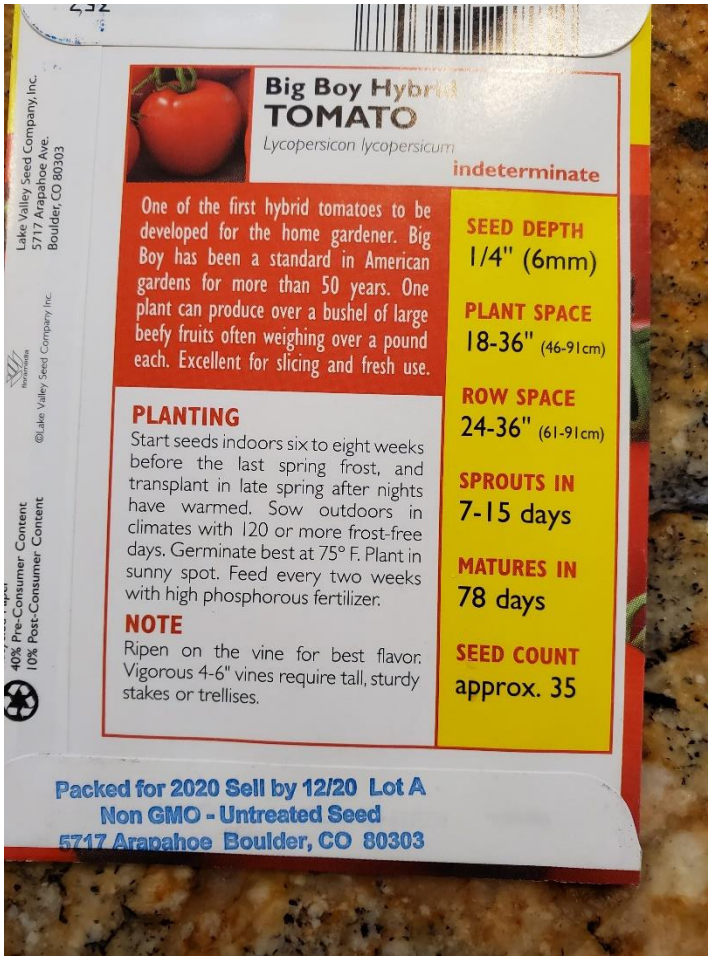
Work backward from anticipated planting date
Use seed starting mix – not potting soil
Moisten soil and gently tamp
Place seeds in cells, blocks, or open flats
Cover lightly – read seed package!
Provide warmth
Cover with dome or plastic to retain moisture
Keep a log of what you plant!
Work slowly and carefully

Read your Seed Packet

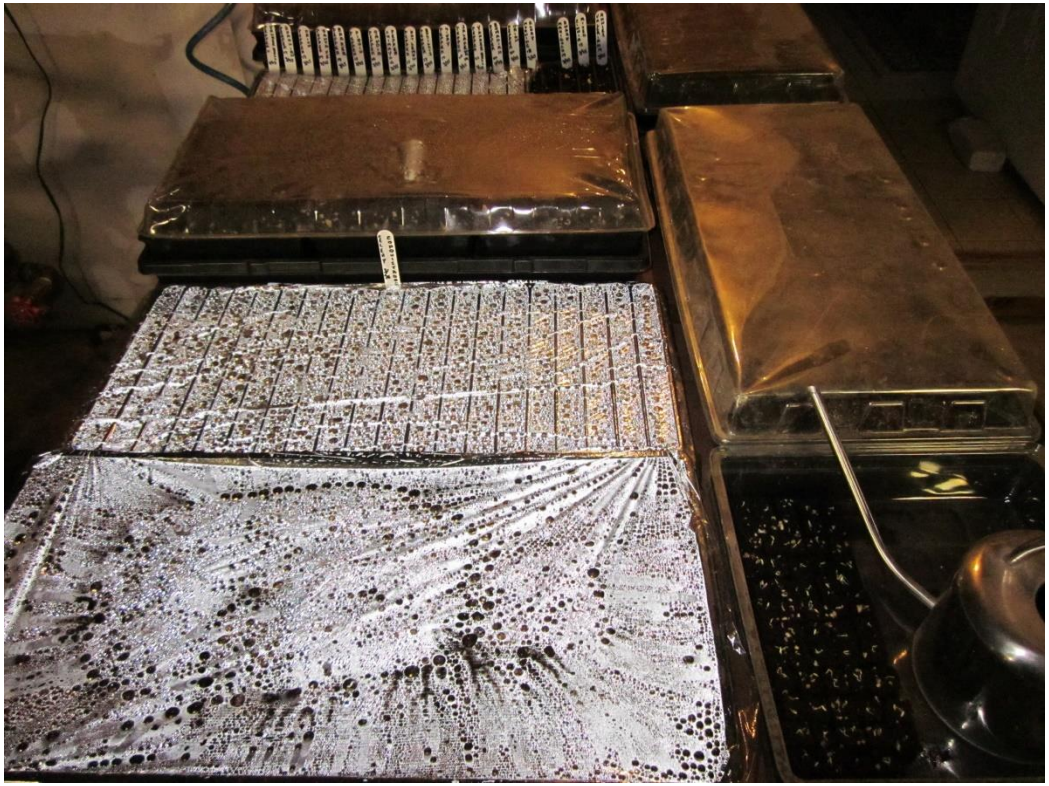


Read you Seed Packet

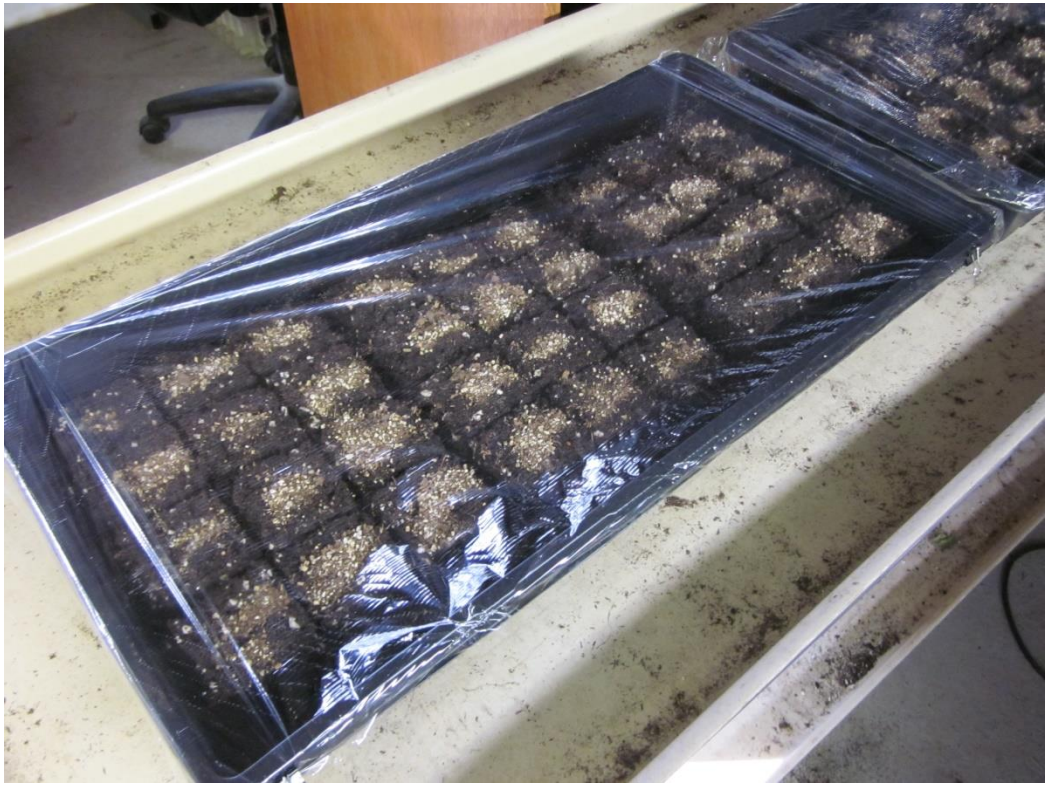




Starting from Seed



Starting from Seed



They’ve Started to Sprout!

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

They've Started to Sprout!

Remove dome to prevent damping off

Provide light 12 hrs./day if possible

Fertilize after true leaves appear

"Pot up" as needed to avoid root binding

Maintain proper moisture

They've Started to Sprout!

University of California
Agriculture and Natural Resources | UCCE Master Gardener Program

They've Started to Sprout!

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Planting Out

Hardening off

Preparing the bed - Compost

Spacing

Deep Planting

Support

Mulch

Watering

Fertilizing

Pruning

Fertilizing

Organic
- ❖Less toxic
- ❖Natural sources

Conventional
- ❖Chemical based
- ❖Mined

N-P-K

Micronutrient

READ AND FOLLOW ALL DIRECTIONS

Fertilization Considerations

Use Starter fertilizer at planting.

Apply a good organic fertilizer every 2-3 weeks after blossoming.

Don’t overfertilize. Especially nitrogen.

Use compost or side dress with a 5-10-10 commercial fertilizer

Hardening Off

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Hardening Off

Start Slowly: for the first day set outside in the shade next to the house. Bring them in at night.

Raise Exposure gradually

Monitor seedlings

Finally leave outside when the forecast is to be above 50 degrees F overnight.

Preparing the Bed

Planting Deep

Planting Deep

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

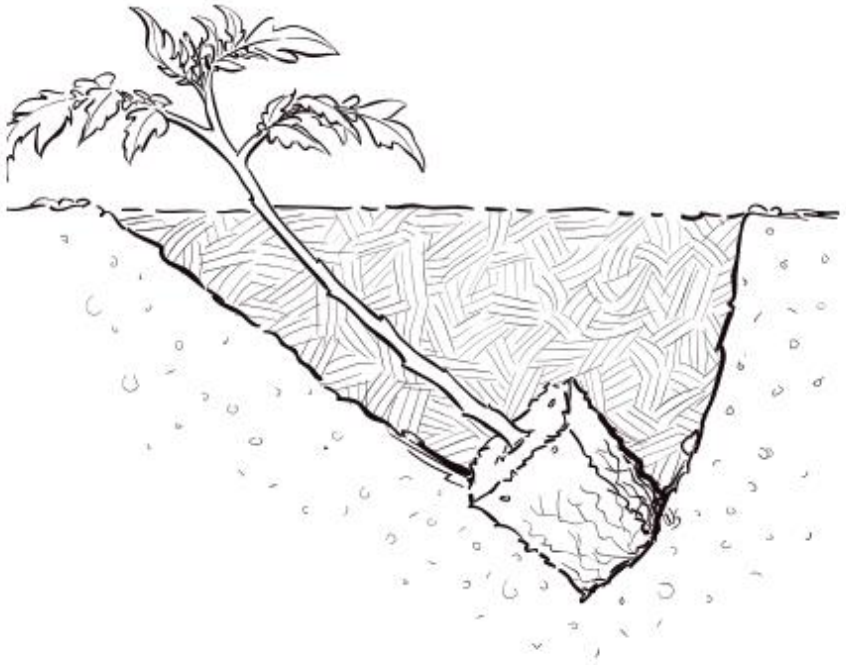


Figure 1. Set tall, lanky tomato plants horizontally into the soil with just a few leaves above the ground. Illustration by Will Suckow.

Plant Deep to increase roots

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Spacing

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Support - Trellis

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

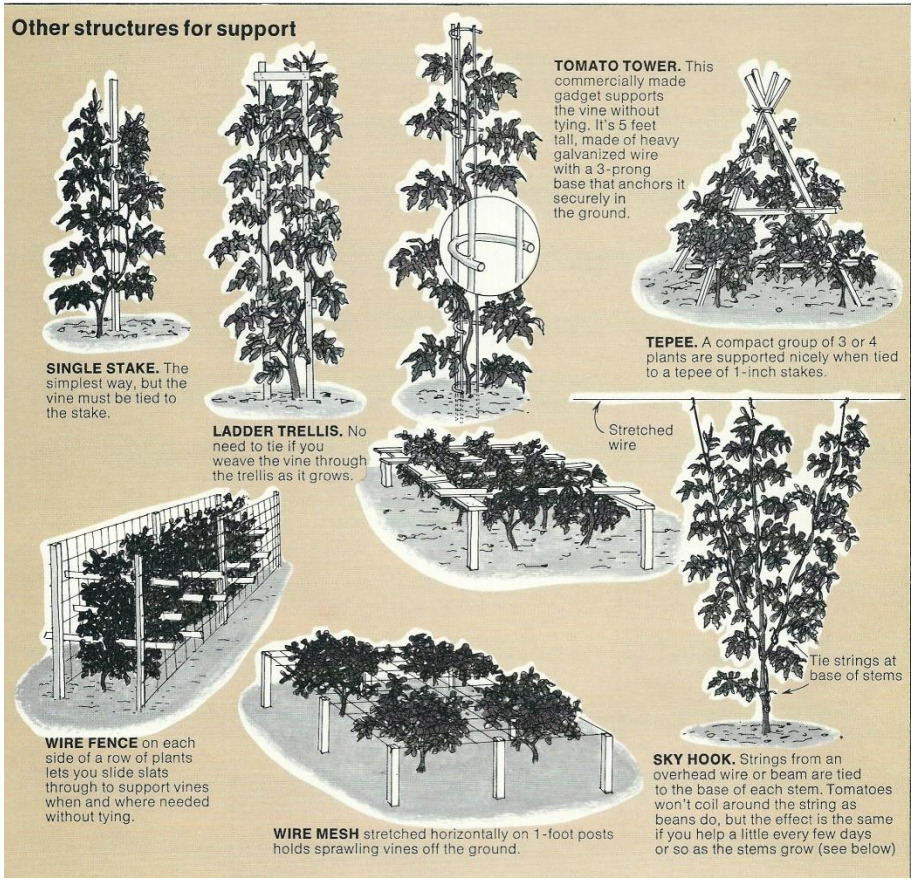
Support - Cage

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Support - Skywire

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Support – Stakes and More



Mulch

Other Considerations

PH of soil

- tomatoes prefer ph from 6.0-7.0

Location and orientation of bed

- east/west with at least 6-8 hours of sun
- avoid cold micro-climates

Crop rotation

- 3-year rotation is good
- don't follow plants from the same family (eggplant, peppers, potatoes)

Access to water

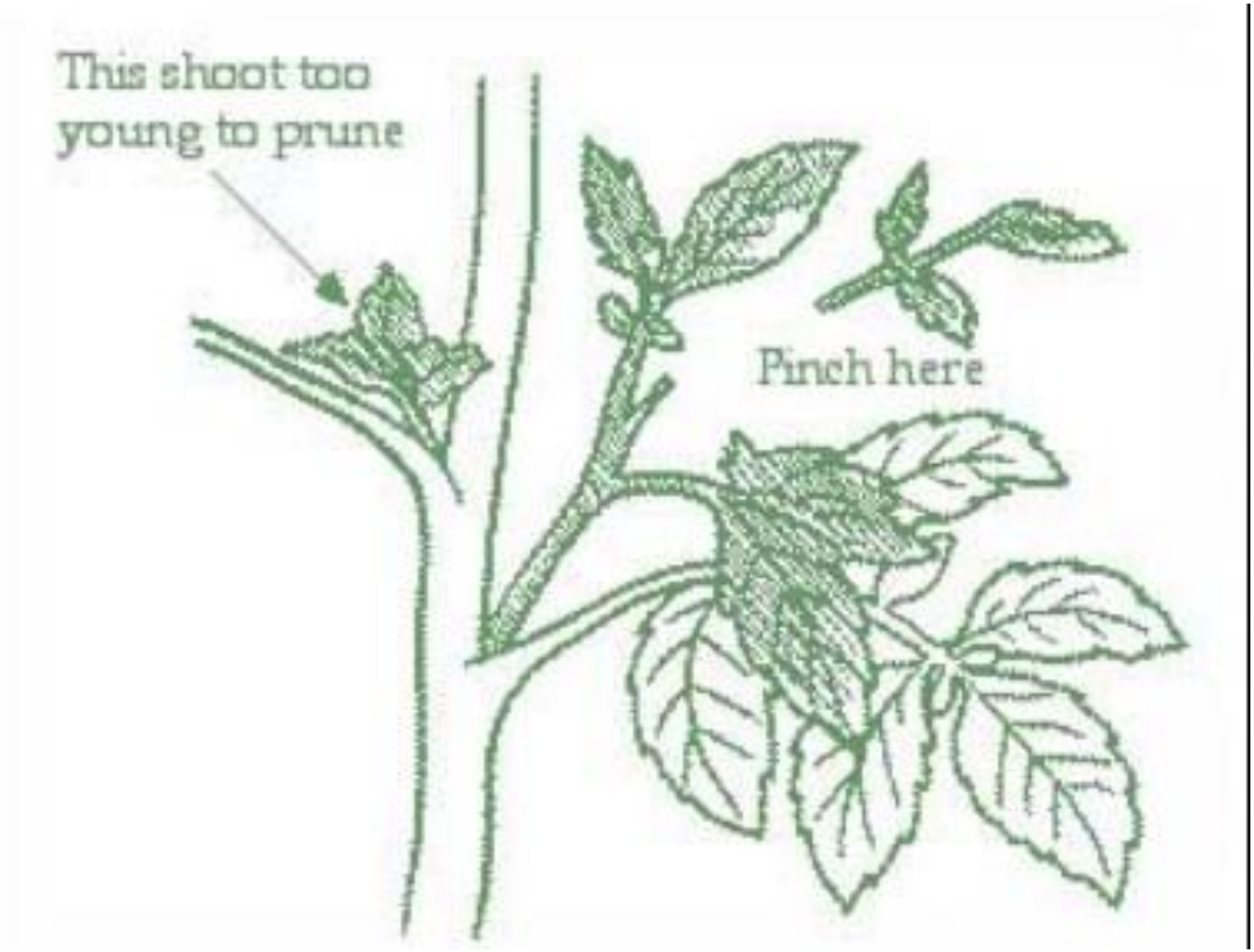
Pruning your tomatoes

Pruning is not always necessary. However, when pruning your tomatoes, remember these main points:

Plants with two or more stems produce more tomatoes with better foliage protection from the sun than plants with one stem. However, tomatoes pruned to one leader will bear earlier but with less yield overall. Choose the stems you want to keep and pinch out the others as they develop.

Severe pruning to one stem will reduce your total crop greatly and also is likely to increase the incidence of some diseases or disorders.

Before removing suckers or side shoots on a tomato plant, wait until two leaves develop and pinch above them.


This shoot too young to prune
Pinch here

Pests and Problems

Vertebrate Pests

Insects

Diseases/Environmental problems

Vertebrate Pests

INSECTS
The Dreaded Hornworm!

University of C
Agriculture and Na

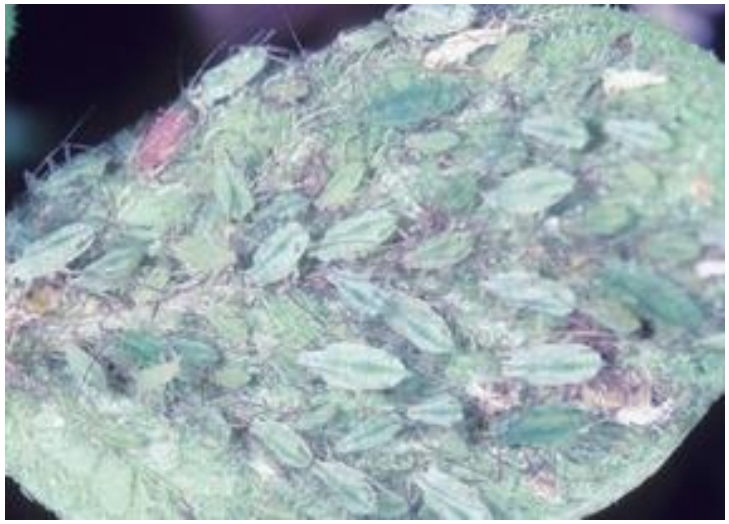
Signs of Invasion

We Have an Ally!
The Brachonid Wasp

University of California
Agriculture and Natural Resources

UCCE Master Gardener Program

Other Common Tomato Pests



POTATO APHID

THRIPS

FLEA BEETLES

WHITEFLIES

Insect Pest	**Natural, Less Toxic Insecticides**
Aphids	insecticidal soap neem oil extract
Tomato Fruitworms & Hornworms	*Bacillus thuringiensis (B.t.)* spinosad pyrethrin neem oil extract
Flea Beetles	insecticidal soap neem oil extract horticultural oil pyrethrin
Whiteflies	insecticidal soap neem oil extract pyrethrin horticultural oil

Tomato Diseases

Bacterial

Fungal

Viral

Environmental

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Tomato Diseases

Bacterial

- Bact. speck
- Bact. wilt
- Bact. canker
- Bact. Spot

Environmental

- Blossom end rot
- Sunscald

Fungal

- Grey leaf spot
- Early blight
- Late blight
- Tomato leaf mold
- Powdery mildew
- Fusarium
- Verticillium
- Stem canker
- Damping off

Viral

- Tobacco mosaic virus
- Apex necrosis virus
- Yellow leaf curl virus
- Spotted wilt virus
- Pepino mosaic virus
- Cucumber mosaic virus

Tomato Diseases

Verticillium and Fusarium wilt

Tobacco mosaic virus

Damping off

Powdery Mildew

Blossom end rot

Sunscald

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Fungus and Virus Diseases – NO CURE!!

VERTICILLIUM WILT

FUSARIUM WILT

TOBACCO MOSAIC VIRUS

EITHER PLANT RESISTANT VARIETIES OR MAKE SURE TO KEEP YOUR SOIL HEALTHY. REMOVE DEBRIS, SOLARIZE BEFORE PLANTING, ETC ?

University of California
Agriculture and Natural Resources | UCCE Master Gardener Program

Damping Off

SPORES ARE PRESENT IN ALL SOILS. USE STERILIZED SEED STARTING SOIL INDOORS. FAST GROWING SEEDS IN WARM SOIL ARE LESS SUSCEPTIBLE.

University of California
Agriculture and Natural Resources | UCCE Master Gardener Program

Powdery Mildew

BEST TO PREVENT RATHER THAN CURE.

AIR CIRCULATION, DRY LEAVES, FULL SUN, RESISTANT VARIETIES. CATCH EARLY WITH OIL, SULFUR, SERENADE.

University of California
Agriculture and Natural Resources | UCCE Master Gardener Program

long trusses for seasons long harvests of exceptional quality, superb orange color and the sweetest tomato flavor. Harvest them in baskets to show off on the kitchen counter for "bet you can't just eat just one" snacks of eye-catching beauty. Indeterminate

early to bear, crack resistant and resistant to Fusarium, Verticilium, and TMV. They

from the garden treat.

University of Californi
Agriculture and Natural Resources

Blossom End Rot

Blossom end rot results from a low level of calcium in the fruit and water balance problem in the plant.

University of California
Agriculture and Natural Resources | UCCE Master Gardener Program

Sun Scald

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Saving Seeds

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Our Favorites!

Black Krim

Limmony

San Marzano

Brandywine

Cherokee Purple

Sun Gold

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

More Prize Winners!

Black Cherry

Jasper

San Pierre

Kellogg's Breakfast

Mortgage Lifter

Pink Berkeley Tie Dye

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Why We Like Them!

Why We Like Them!

TOMATOES IN THE HOME GARDEN

Publication Number 31-159

(revised August 2003)

EDITED & ADAPTED BY ***Cindy Fake****, Horticulture & Small Farms Advisor, Placer & Nevada Counties, FROM* ***Pests of the Garden and Small Farm****,* ***M. L. Flint****;* ***Tomato (Lycopersicon esculentum)****,* ***M. Ratliff, H. Bale,*** *et al.; &* ***Tomatoes****,* ***D. Pittenger****.*

HISTORY

Tomatoes are native to tropical America and were introduced to European gardens in the 16th century. They were originally grown as an ornamental known as the love-apple and were thought to be poisonous. In the last century, they have become one of the most popular home garden vegetables.

TOMATO VARIETIES

There are about 400 tomato varieties available commercially, with a broad range of sizes, colors, flavors and maturity dates. Remember that the date of maturity on the package reflects days after transplanting, not seeding. Nurseries and mail order catalogs provide a wide selection of seeds.

Look for the letters **V, F, N** on the seed packet or plant label as

Nurseries and garden centers are a good source for transplants, but varieties are limited. Choose sturdy, thick-stemmed, dark green plants that are six to eight inches tall, without flowers.

CULTURE

Tomatoes are warm season plants that require a minimum of three frost-free growing months. Optimum growing temperatures are between 65 and 90° F. Below 55°F and above 95°F, they may not set fruit. In areas where summer nights are cool, choose early maturing varieties.

Tomatoes respond to soils enriched by compost or other organic material. They have only moderate nitrogen needs, and high nitrogen levels will cause lush growth of foliage and stems at the expense of flowering and fruit production. At fruit set,

determinate varieties. Avoid large fluctuations in soil moisture, however, to reduce blossom-end rot and fruit cracks.

Blossom-end rot, which is characterized by a sunken, leathery, dark spot on the bottom of the fruit, is associated with fluctuations in soil moisture and calcium deficiency in the fruit. It is more common in larger fruits and Roma type tomatoes.

GROWTH HABITS

Tomatoes exhibit two growth habits: determinate and indeterminate. **Determinate** tomato varieties grow to a certain size *(usually three to five feet),* then flower and set fruit. They bear fruit all at once and then decline. Grow this type if you have a short growing season or if you want your tomatoes all at one time. Most of the early ripening

PUBLICATION 8159

Growing Tomatoes in the Home Garden

DENNIS R. PITTENGER, University of California Cooperative Extension Area Horticulture Advisor; **NANCY F. GARRISON,** University of California Cooperative Extension Horticultural Advisor, Santa Clara County; **PAMELA M. GEISEL,** University of California Cooperative Extension Landscape and Turf Management Farm Advisor, Fresno County; **CAROLYN L. UNRUH,** staff writer, University of California Cooperative Extension, Fresno County

UNIVERSITY OF CALIFORNIA
Division of Agriculture and Natural Resources
http://anrcatalog.ucdavis.edu

Tomatoes are among the most popular vegetables grown in home gardens. They also prompt frequent cultural and pest management questions, though many problems can be avoided by planting disease-resistant varieties that are well adapted for your growing area. Most tomato varieties available to the home gardener produce flavorful and juicy fruit and require relatively little space for a large yield. When properly cared for, each tomato plant can bear 10 to 15 pounds (4.5 to 6.8 kg) or more of fruit.

Deciding which tomato variety to plant may seem a difficult task, given the large number that are available and the differences in size, habit, and climatic requirements. In addition to the usual round red tomato, home gardeners can choose to grow orange, yellow, pink, or striped tomato varieties, or those shaped like pears, grapes, or plums. Often these unusual varieties are available only to the home market and may be grown on limited acreage as they may have little commercial appeal. Some yellow tomatoes have a mild, sweet flavor with low acid content. Ask gardening friends and neighbors for the names of their favorites, and don't overlook the heirloom varieties that are also available.

Tomatoes are described as determinate or indeterminate based on the plant's growth habit. Determinate, or "bush," tomato plants have a somewhat bushy appearance, grow to a given size, about 3 to 5 feet (0.9 to 1.5 m), bear most of their fruit within about 4 to 6 weeks, and then decline in vigor. Most early-ripening and canning

Ask a Master Gardener

Harvesting Seeds from the Garden

By Trish Grenfell, Placer County Master Gardener

Q I am wondering if I can save money next year by using seeds from my current garden plants.

A The frugal gardener should be outside searching plants that are going to seed. That's right, the seeds are sitting right in front of us, waiting to be harvested!

As wonderful as this may seem, you do take a risk when you use these harvested seeds rather than those you purchase. Your garden seeds are the result of random, open pollination by bees and other insects or other natural agents (birds butterflies) and may not produce plants identical to their parents (i.e., hybrid varieties). Purchased seeds are guaranteed to have the desirable traits of the specific, selected parent plants from which they were bred. Self-pollinating plants (i.e., tomatoes) offer the best opportunity for a home gardener to save seed, because the pollen is transferred directly to the stigma within the flower, but even that is not fool proof. That said, you certainly can't beat the price, and the adventure can add to the fun.

If left alone, the seeds will dry and drop around the original plant. (If you have a self-seeding plant, you can let them seed on their own. It may get a bit crowded, but you can dig up the 'babies' and replant them.) When you want to collect the seeds, don't remove the spent flowers. Instead, let nature take its course, and keep an eye out for seedpod development. One removal method is to wait until the plant is brown and then just "shake" the seeds out, but a more efficient method is to snip the old flowers/fruit. Different plants produce seed in different forms. Sometimes they're encased in fruit and can be collected when the fruit is allowed to dry (collect from very ripe but not rotting fruit). Non-fruit seeds develop in a papery pod after the bloom fades. Seed heads need to be collected before these pods naturally release the seed. Note: do not harvest seeds on a wet day.

References

HANDOUTS

Fake, Cindy. *Tomatoes in the Home Garden*. UCCE Placer/Nevada Publication 31-159. rev. 2003.

Pittenger, Dennis. *Growing Tomatoes in the Home Garden*, UCCE Publication 8158, rev. 2005

RESOURCE LINKS

http://ucanr.edu/sites/placernevadasmallfarms/files/63813.pdf

Managing Pests in Gardens: Vegetables: Tomato (ucanr.edu)

Growing Vegetables in Placer County - UC Master Gardeners of Placer County (ucanr.org)

BOOKS

California Master Gardener Handbook. Second Edition, UCANR Publication 3382

Thank You!

Any Questions?

Master Gardener Hotline: **(530) 889-7388**

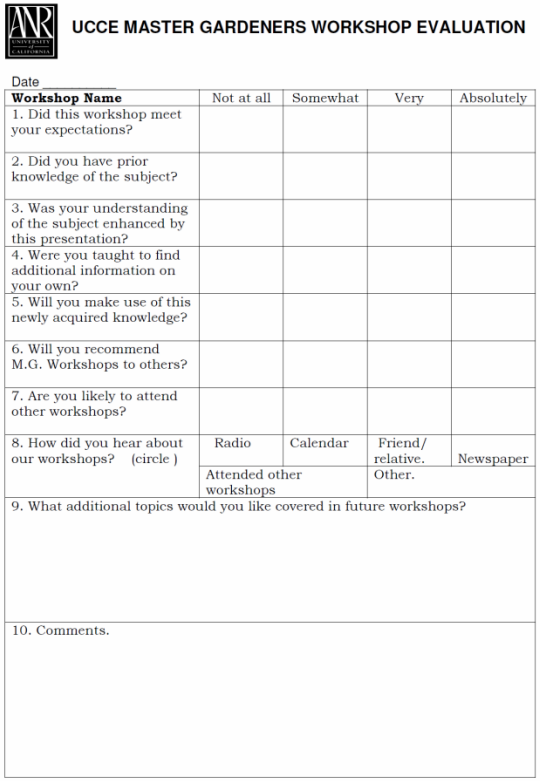
Master Gardener Website: **pcmg.ucanr.org**

Evaluations, please!

Evaluations

Please help us improve our programs by filling out an evaluation at the end of the workshop.

Thanks for coming!



UCCE MASTER GARDENERS WORKSHOP EVALUATION

Date

Workshop Name	Not at all	Somewhat	Very	Absolutely
1. Did this workshop meet your expectations?				
2. Did you have prior knowledge of the subject?				
3. Was your understanding of the subject enhanced by this presentation?				
4. Were you taught to find additional information on your own?				
5. Will you make use of this newly acquired knowledge?				
6. Will you recommend M.G. Workshops to others?				
7. Are you likely to attend other workshops?				
8. How did you hear about our workshops? (circle)	Radio	Calendar	Friend/ relative.	Newspaper
	Attended other workshops		Other.	
9. What additional topics would you like covered in future workshops?				
10. Comments.				

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program