Growing Tomatoes, Peppers & Eggplants From Seed

Love Apple Farms
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Class Agenda and Miscellaneous

- Please keep talking to a minimum. Also let’s do questions at the Q&A times to avoid the class going long.
- First we’ll talk pepper and eggplants, then tomatoes.
- A bit of history, a bit of categories, and their care. Some care overlaps.
- There will be several breaks
- Then we’ll sow our flats
- Then we’ll discuss how to germinate the flat and ongoing care.

What we don’t discuss today: Other summer vegetables or care AFTER the tomatoes go into the ground. We do discuss pepper and eggplant care after they are planted, but our 4 hour Tomato Masters class discusses care after planting.
Pepper Categories

**Sweet bell peppers** come in various sizes and colors, and the fruits’ colors change as they mature. They grow best where summers are long and warm.

**Specialty sweet peppers** include pimentos, frying peppers, and other sizes, shapes and flavors. Small-fruited varieties are among the easiest peppers to grow.

**Southwestern chile peppers** have complex flavors with varying degrees of heat. Many varieties bear late and all at once, so they can be a challenge to grow in climates with short summers.

**Specialty hot peppers** range from moderately spicy jalapeños to hotter cayennes to hottest-of-all habanero crosses. Most are easy to grow, however have long germination times and fruit maturation times.

**Ornamental peppers** may feature spicy, brightly colored fruits, purple or variegated foliage, or both. These are still edible and interesting, but their show-stopping appearance is fantastic.
Scoville Units

- The **Scoville scale** is a measurement of the spicy heat of a pepper.

- Wilbur Scoville, in 1912, devised the test and is quite an accurate measurement of SHU (Scoville Heat Units).

- The number SHU indicates the amount of capsaicin present. Capsaicin is a chemical compound that stimulates chemoreceptor nerve endings in the skin, especially the mucous membrane.

- Red Savina from Mexico - started out as hottest pepper (a Habañero type) with 300,000 SHU
- Bhut Jolokia (Ghost Pepper) from India recorded at around 1,000,000 SHU
- Naga Viper is around 1,359,000 SHU
- Carolina Reaper is around 2,200,000 SHU
- New one as of 2017: Dragon’s Breath at 2,500,000 SHU
<table>
<thead>
<tr>
<th>Example</th>
<th>Scoville Heat Units</th>
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<tbody>
<tr>
<td>Pure capsaicin</td>
<td>16,000,000</td>
</tr>
<tr>
<td>U.S.-grade police pepper spray</td>
<td>2,500,000 - 5,300,000</td>
</tr>
<tr>
<td>Carolina Reaper</td>
<td>1,000,000 - 2,200,000</td>
</tr>
<tr>
<td>Trinidad moruga scorpion</td>
<td>1,000,000 - 2,000,000</td>
</tr>
<tr>
<td>Bhut jolokia (ghost pepper)</td>
<td>855,000 - 1,041,472</td>
</tr>
<tr>
<td>Red Savina habanero</td>
<td>350,000 - 580,000</td>
</tr>
<tr>
<td>Habanero chile, Scotch bonnet</td>
<td>100,000 - 350,000</td>
</tr>
<tr>
<td>Chiltepin</td>
<td>50,000 - 100,000</td>
</tr>
<tr>
<td>Tabasco pepper</td>
<td>30,000 - 50,000</td>
</tr>
<tr>
<td>Manzano pepper, chile de árbol</td>
<td>12,000 - 30,000</td>
</tr>
<tr>
<td>Serrano pepper</td>
<td>6,000 - 23,000</td>
</tr>
<tr>
<td>Chipotle pepper, jalapeño</td>
<td>3,500 - 10,000</td>
</tr>
<tr>
<td>Tabasco brand Original Red Sauce</td>
<td>2,500 - 5,000</td>
</tr>
<tr>
<td>Poblano (ancho), pasilla</td>
<td>1,000 - 4,000</td>
</tr>
<tr>
<td>Paprika, pepperoncini, pimento</td>
<td>100 - 900</td>
</tr>
<tr>
<td>Bell pepper</td>
<td>0</td>
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When to Start Pepper & Eggplant Seeds

- Start seeds indoors in late winter, 12 to 16 weeks before your last spring frost date. Today’s peppers & eggplants will be ready to plant out late April or early May. The tomatoes will be ready earlier than that.
- Provide bottom heat to keep the seed flat near 80 to 85 degrees Fahrenheit.
- Make sure the seeds stay slightly moist. Seeds should sprout within three weeks. Some will take longer. This is a lot longer than tomatoes!
- Transfer seedlings to larger containers around April 1. Grow them in larger pots for another 4 to 8 weeks before planting out.
- Don’t set peppers or eggplants outside until at least two weeks after your average last frost date, during a period of warm weather.
Culture of Peppers & Eggplants

- All peppers and eggplants grow best under warm conditions, but gardeners in cool climates can keep peppers happy by using row covers.
- Choose a sunny site that has fertile, well-drained soil with a pH between 6.0 and 6.5.
- Add fertilizers and compost to planting beds. We add one bag Harvest Supreme, one quart 4-6-3 fertilizer and one quart worm castings per 50 square feet bed. Also sprinkle one T of Mykos on rootball of each as you are planting and throw handful of Bone Meal into hole.
- Be careful with nitrogen when preparing your planting holes, as overfed plants produce lush foliage but few fruits. Use a high-nitrogen fertilizer only if you’re growing peppers in poor soil.
- Space peppers and eggplants about two feet apart, with the exception of bell peppers, which can be 18” apart.
- Unlike tomatoes, do not sink them deeper in their planting hole than perhaps an inch or two.
Harvesting Peppers

- Both sweet and hot peppers can be eaten at all stages of growth but are most flavorful when mature and fully ripe.
- Hot peppers are typically green in early maturity but quickly turn colors including yellow, orange, purple, red, or chocolate brown depending on the cultivar. The different cultivars vary drastically in size and shape. Although they can be picked when green, their heat and flavor increases as they are allowed to mature and ripen to colors.
- Sweet Bell type peppers are can be harvested when firm and full size (at least 3 1/2 to 4 inches) but still green. If left to ripen, they may also turn red, yellow, orange, purple or even chocolate-colored depending on the cultivar. The less green you see, the better the taste in both sweet and hot peppers.
- Once peppers begin to turn colors, they progress quickly so should be monitored carefully.
- Once they turn their final color, they deteriorate very fast and should be picked and refrigerated.
Eggplant 101

- Originated in India
- Hundreds of cultivars
- Colors: white, green, striated, light purple, dark purple, yellow, orange
- Shapes: small round, elongated, globe, pear
- Harvest when fruit is shiny
- Dull fruit is over ripe and will be bitter
- When thumb pressed into flesh, it springs back. If not, eggplant is not ripe.
Staking Peppers & Eggplants

You must stake them, otherwise fruit will touch ground and become infested with worms and pillbugs.

First Method:

Horizontal netting aka "Horti-Net"

Second Method:

Regular conical tomato cages (not good for tomatoes, but great for peppers & eggplants)
Pro-tip: Clear or Black Mulch

- Add to bed 3 weeks before planting along with Mustard Meal (for nematode control), compost, worm castings & fertilizer.
- Lay over irrigation lines.
- Make contact with soil.
- Cut an "X" and plant
- Cover plastic with straw after weather turns hot in July.
Bed Covers and Row Covers

● In cool climates, use black or clear plastic mulch in addition to row covers to create warm conditions for peppers and eggplants. Tomatoes love this too.
● Row cover, aka “floating row cover” on hoops to keep young plants happier in early part of season.
● If you don’t use plastic, then cover surrounding soil with a mulch of clean straw or grass clippings so ripening fruit don’t come in contact with soil.
● Don’t plant before May 1 unless on plastic and covered with FRC.
● In colder climates, like mountains, best to wait until May 15.
● Cover with FRC for first month for max results.
● Put on plastic their whole season if you can swing it.
Troubleshooting and Tips

- Remove first few blooms in order to push plants' energy into green growth.
- Best to put peppers & eggplants in different bed than tomatoes, as the former need more frequent watering.
- Don't let dry out between watering.
- If blossoms drop on their own, it means nights are too cold.
- Tobacco mosaic virus - don't smoke around plants or touch.
- Blossom end rot: calcium deficiency. Add handful of bone meal to planting holes.
- Peppers & eggplants actually like to be grown in pots.
LET’S TALK TOMATOES NOW!
Heirloom vs. Hybrid

- Saved seed will sow true
- 1 genetic parent
- Diversity in color, shape, taste
- Less prolific
- Green shoulders
- Mostly Indeterminate

- Cannot save seed
- 2+ genetic parents
- Disease-resistance & shelf life
- More prolific
- Perfect-looking
- Mostly Determinate
### Fruit Size and Minimum Sunlight Hours

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<thead>
<tr>
<th></th>
<th>Minimum Sunlight Hours</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Cherry</td>
<td>3 hours min.</td>
<td>.5 ounce</td>
</tr>
<tr>
<td>Small</td>
<td>4 - 5 hours</td>
<td>1-3 ounces</td>
</tr>
<tr>
<td>Medium</td>
<td>5 - 6 hours</td>
<td>4-8 ounces</td>
</tr>
<tr>
<td>Large &amp; XL</td>
<td>7 - 8 hours</td>
<td>&gt;9 ounces</td>
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- Coastal fog reduces sunlight hours
- Shade from trees is a factor
- Beginning and end of season reduces sunlight hours
Indeterminate Growth Habit

- Undetermined as to how tall it will get
- Requires proper staking
- Will shade other plants
- Harvest over longer season
- Put larger fruiters on south side of beds
Culinary Purposes of Different Shapes

Beefsteak - Slicers, salads, not great canners

Oxheart - Double duty, slicing and canning

Plum, Pear, Roma-type - Use for canning and salsa making

Ruffled - great for stuffing (a bit hollow)
The role of color when selecting tomatoes

- Red tomatoes are not typically sweet - they are “bite you back,” higher acidic flavor than other colors. Some people would call them having “old fashioned” flavor.
- Pink tomatoes are sweet
- Orange tomatoes can be sweet or mild in flavor (think Sungold)
- Yellow tomatoes can also be on the sweeter side
- Black or purple tomatoes have less acid, but more of an umami flavor, some say smokey or barbequey flavor
- White tomatoes can be some of the sweetest around, with hints of guava and honey
- Green-when-ripe tomatoes can be complex in flavor, with excellent balances of sweet and acid.
- Bi-color tomatoes will be the flavor of their coloring: if red and yellow, there will be a nice acid/sweet balance
Sowing Flats

- Don't poke seeds into soil or make a divot (we will cover with soil afterwards)
- Only 4 seeds per cell
- Space seeds apart evenly ▶▶▶▶▶ Example ▶▶▶▶

- Half labels, pencil only, push label in so it contacts bottom of flat
- Don't make labels until seed is in hand for that variety
- Pass in circle, clockwise. Seeds will go around several times
- Separate seeds stuck together by rolling in between fingers
- Seeds will flip
- Put lids back on tight after selecting. Only have 1 container open at a time
Seedling Tray Care

- Water 3 times and cover with plastic
- Optimal temperature: 75 - 80 degrees
- Remove plastic cover once seeds sprout
- Immediately put them out in direct sun after first seed sprouts
- Then back inside on heat mat each night for another 3 weeks. Thereafter, they don’t need heat mat, but still need to be inside at night and outside in sun during day.
Pricking Out (aka Potting Up)

- Transplant into small containers once tomatoes show several sets of leaves. Peppers and eggplants at least one set. Ensure pots have holes in bottom.
- Tomatoes get transplanted much deeper than they were before. Not peppers or eggplants (only one inch deeper).
- Use G&B Potting Soil (buy here and we will load).
- These trays go outside in direct sun and then back inside at night until at least April 15. Exception is bad storm.
- Ask me for free trays/pots today only
- Tomatoes may need potting up a second time around March 15.
- Start fertilizing with half strength liquid organic all purpose fertilizer or worm casting tea after March 15.
Three Weeks Before Planting Out

- Add 1 pound mustard meal per 50 square feet of growing space.
- Mustard meal proven to reduce harmful soil nematodes.
- Nematodes are harmful when they leave galls or breaks in the tomato roots, draining the plants’ nutrients, preventing the plant from thriving, and allowing an avenue for Verticillium Wilt to enter the plant.
- This is a good time to also add compost (Harvest Supreme), worm castings and 4-6-3 to beds. Then cover with clear or black plastic.
- If on coast: plant outside in early April.
- Exception: if in middle of storm or cold spell (wait for it to end).
- If inland: late April or early May.
- Higher elevations (Summit, Boulder Creek, Sierras: definitely mid May.
Planting Hole Recipe

- Dig 2 foot deep hole (if you are using a fish head)
- Put fish head in bottom of hole or ½ cup Fish Meal
- Add ½ cup Bone Meal
- Add ½ cup G&B 4-6-3 Fertilizer
- Add ½ cup worm castings
- 2 aspirin tablets
- 2-3 eggshells

Add soil until the hole is deep enough so that the transplant has half its stem underground.

- Add ¼ pkg to 1pkg (about ¼ to 1 cup) Mykos (sprinkle on root ball)

Continue adding soil until the hole is filled. Push gently; do not crush. Water three times. Then back off watering, probably for at least a week. Check soil below soil level to see if getting dry before watering again.

TOMATO MASTERS CLASS: Takes care from this point onward, including fertilizing, pests, diseases, pruning, staking, harvesting, seed saving.