Why start your own vegetables from seeds?

• Greater variety
• Stronger & healthier seedlings
• Better adapted to your local micro climate
• Cost savings
• Earlier harvest
• Grow organic
• Joy and satisfaction of growing your own
from one small seed
to hundreds of these
• Always start indoors:
  
  *tomatoes, peppers, eggplant, okra, celery*

• Start indoors (or out) or direct seed:

  *Squash, lettuce, greens, most winter vegetables, most herbs, (corn, cucumbers)*

• Only direct seed:

  *carrots, beets, radishes and other root crops, Swiss chard, beans, peas, (corn, cucumbers)*
Varieties for the greater Richmond area

Less than 80 - 85 days to Maturity (for tomatoes)

Small fruited varieties

**Tomatoes:** Cherry, Grape, Currant, some Sauce tomatoes, some Heirloom, early tomatoes

These have worked well for me in my El Sobrante garden: Sungold-hybrid, Roma, Oregon Spring - parthenocarpic, Brandywine, Caspian Pink, Carmello-hybrid, Cherokee Purple

**Peppers:** 70 or less days

Early Jalapeño, Anaheim, Ancho, Paprika”Alma”, perennial Rocoto (hot)

**Eggplant:** Japanese type

“Rosa Bianca”, Dusky
Sources for information

Seed packets

<table>
<thead>
<tr>
<th>Seed Depth</th>
<th>Soil Temp. For Germ.</th>
<th>Days To Germination</th>
<th>Light Requirements</th>
<th>Thin Plants to</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>70-85°F</td>
<td>8-25</td>
<td>full sun</td>
<td>12-18&quot;</td>
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SEEDS

PEPPERS Capsicum annum

Sowing Indoors-Start seeds 8 weeks before your average last frost date. Use a sterile seeding mix and keep uniformly moist. Germination may be slow and erratic. Provide the seedlings with plenty of light to produce strong, high yielding mature plants.

Sowing Outdoors-Not recommended. Growing Tips-The number of early flowers can be increased by giving the plants a cold treatment before transplanting outside. This is done by exposing transplants to temperatures of 55°F during the night and 70°F in the day. Cold treatment should occur only after there are 3 sets of true leaves. Transplant out when soil temperature has warmed to 60-65°F.

Fertilization Tips-High phosphorus soil amendments such as bone meal will help get the plants off to a fast start. Apply 1/4 cup of our blended organic fertilizer around each plant to provide the nutrition necessary for optimum production.

Seed Specs-Min. germ. standard: 70%.
Usual seed life: 2 years.
Timing

• Start seeds 8-10 weeks before the average last frost date (if you live on the East Coast)

• Website for checking the historical last frost date in Contra Costa County: [http://davesgarden.com/guides/freeze-frost-dates/](http://davesgarden.com/guides/freeze-frost-dates/)

• If you live in the greater Richmond area start seeds 8 - 10 weeks before you can expect night temperatures to stay in the mid 50's; between Feb 1st and March 1st; I start peppers and eggplant 2 weeks before tomatoes

• Monitor the current forecast for frost before setting outside
Seed Germination

Requirements to break dormancy:

- Planting medium
- Heat - optimal temperatures vary
- Moisture
- Air (oxygen and carbon dioxide)
- some seeds also require light (Dill)
Planting Medium

• Garden soil should not be used because of the presence of pathogens. There is no simple, inexpensive method to ensure that all pathogens are killed by baking garden soil.

• Commercially available “seed starting mix” or “potting mix”.

• Create your own mixture of equal parts vermiculite, peat or coconut coir (re-hydrated) & perlite; can add worm casings for nutrients.

• Pre-moisten mix - should be damp like a wrung out sponge.
Containers

- Choose containers that have enough depth for development of root system, e.g., 3-4 inches.
- Use household discards such as yogurt containers or milk cartons. Be sure to add drainage holes!
- Make your own from newspapers
- Re-use commercial containers such as large four/six packs, 4” pots etc; check with friends and neighbors, garden club members. Some nurseries may have extra pots available for the asking. Native Here Nursery in Tilden Park has an assortment of free pots available for their customers: http://www.ebcnps.org/nativehere.html

Some sources recommend egg shells or egg cartons but we find they are not sufficiently deep enough and you can’t ensure sterility; a lot of “six packs” are also too small.

- Purchase commercial seed starting pots.
- It is recommended to sterilize pots by soaking for 10 minutes in bucket with 2 tablespoons of bleach and 1 gallon of water.
Roottrainers® from Lee Valley
Heat

• Many warm season vegetable seeds, such as tomatoes, require a soil temperature range of 70-85° in order to germinate in a timely manner.

• Some gardeners supply bottom heat by putting the flat on top of the refrigerator or television. (Note: out-dated information - no longer recommended)

• Heat mats permit you to provide a constant, consistent heat source in a safe manner.

Safety note: Do NOT use old electric blankets because these cannot tolerate moisture and are not designed for 24/7 use.
Light

• Ordinary window light is generally insufficient and will create “leggy” plants.

• Use 4 ft regular 40W fluorescent lights - no need to use expensive full spectrum lights - on for at least 12 hrs, 16 hrs is optimal, no more than 18 hrs - use timer.

• Adjustable: Initially, 1-2 inches above the potting tray; increase the height as the seedlings grow.

• Consider constructing or purchasing a light stand.
Commercial light stand (purchased from Lee Valley)

Do-it-yourself suggestions

• Convert a book shelf
• Build a light table from shelving system parts

Simple Light Stands from PVC Pipe

Use 3/4” to 1” schedule 40 pipe, also works as temporary shelter, greenhouse, shade house


new 1-30-2010 gk
Starting seeds indoors: the process

• Prepare labels with the date, variety and species.

• Sterilize your containers; put in tray.

• Mix and moisten your potting medium in a bucket before filling the containers. If no water leaches out when you squeeze the soil, it is sufficiently moist.

• Plant the seeds. The number of seeds per pot depends on the viability of your seed (age, storage). Rule of thumb: 2-4 seeds per pot or cell.

• Cover the seeds with the soil mixture; see seed packet for seed depth or use rule of thumb: soil on top should be at least the same thickness as the size of the seed.

• Gently press soil to insure good contact.

• Water with a spray bottle until the top layer of soil is moist.

• Set containers in tray and cover with plastic or dome.

• Set the tray on the heat mat.

• Check the seed tray daily to ensure that the soil is moist, mist with sprayer if needed. Also check for signs of sprouting seeds.
Tending your seedlings: part one

As soon as your seedlings start to germinate:

• adjust the grow light to within 1-2 inches of the top of the container and turn on.

• Ventilate plastic cover regularly to prevent moisture build-up and damping off.

• Remove tomato seedlings from heat mat as soon as they have sprouted. Peppers and eggplant benefit from being left on heat until first true leaves appear.

Remove cover once 1/2 of seedlings emerge (or even earlier).

When the first true set of leaves appears:

• Remove remaining seedlings from heat.

• Start to fertilize all seedlings with 1/2 strength of liquid fertilizer such as fish emulsion, sea kelp etc twice a week.

Source: http://www.veggiegardener.com/what-are-a-vegetable-plants-true-leaves

• Note: as seedlings grow you will need to increase the height of the lights, keep adjusted to no more than 2” above top of seedlings.
Damping off
common cause of seed starting failure

• Use sterile, soil-less mix; sterilize containers
• Pre-soak seeds in water with crushed garlic
• Keep soil level high, don’t bury seeds more than 4 times their thickness
• Don’t let moisture accumulate, don’t overwater or over-fertilize.
• Don’t crowd plants
• Keep well ventilated
• Other anti-fungal agents:
  * Cinnamon - thin layer on top of soil
  * Strong chamomile or nettle tea added to water ~ 1 oz /Quart
  * Anything acidic such as peat moss

http://davesgarden.com/guides/articles/view/277/
Tending your seedlings: part two

- After the seedlings develop 2-4 sets of true leaves, thin to the 2 strongest seedlings by cutting the “losers,” the less strong seedlings, with scissors. Do not pull the seedlings out because you will disturb the root system of the “winners.”

- After the seedlings develop 4-6 sets of true leaves, transplant each seedling to a separate, larger pot, e.g., 4-6 inches in size.

- Use regular potting mix and start using full strength liquid fertilizer once week. Be sure to label each new pot with name.
Hardening Off: Acclimating Seedlings to the Outdoors

- At least 2 weeks before the anticipated planting date, and weather permitting, set the seedlings outside each day to acclimatize to the outdoors.

- Where: in a sheltered location away from sun and wind, a greenhouse, temporary shelter, shade house

- How long: 2 hours on Day One, gradually increase by 1 hour a day and expose to more sun each day.

OR:

put in greenhouse, temporary shelter with shade cloth, gradually move back protection; bring inside at night if temperatures are expected to drop to 40 or below
Preparing garden for transplanting

At least 2 weeks before transplanting:

• Add finished compost to soil (if you did not sheet compost over the winter).

• Water thoroughly.

• Warm up soil: covering with one layer of black plastic is the easiest and least expensive way to do this. It will also kill any emerging weed seedlings. Soil in raised beds and pots warms up earlier.

• After planting: use mulch (e.g. straw) to suppress weeds and conserve moisture.
Tomatoes: Special Transplanting Techniques

- Tomatoes benefit from being transplanted deeply.
- Snip off bottom leaves and bury stem up to top set of leaves. Take care not to bruise stem.
- When planting outdoors, make a trench, lay on side and gently bend up stem. Bury to top 2 sets of leaves.
- Add garden lime ~1/2 cup per plant; adds calcium, prevents blossom-end-rot.

Bibliography

Last Frost Date:
http://davesgarden.com/guides/freeze-frost-dates/

Websites:
http://davesgarden.com/guides/articles/view/556/ - “Seed Starting 101”


http://www.organicgardening.com/feature/0.7518.s1-5-19-178.00.html - “Simple Seed Starting.”

http://www.sunset.com/garden/garden-basics/foolproof-system-starting-seeds-00400000016238/
“A foolproof system for starting seeds”

http://ucanr.org/Gardening/
UC Davis Website

Books:


Equipment Resources*

*You can also check for used equipment and materials on Craigslist, Berkeley Parents Network, Freecycle, Urban Ore (Berkeley), This & That (San Pablo)

Mail order sources for gardening equipment

Lee Valley  http://www.leevalley.com/
Seed starting equipment (lights, heat mats, containers, Roottrainers), tools and more

Gardeners Supply Company  http://www.gardeners.com/
Seed starting equipment (lights, heat mats, containers), tools and more

Mail order sources for seeds plus gardening equipment and supplies

Peaceful Valley Farm Supplies  http://www.groworganic.com/
Seed starting equipment, tools, seeds, soils, fertilizers, PVC fittings

Territorial Seed Company  http://www.territorialseed.com/
Seed starting equipment, tools, seeds and more

Most Seed companies also sell propagation supplies

Do-it-yourself Websites

http://www.washingtonpost.com/wp-dyn/content/article/2010/02/16/AR2010021604782.html
"DIY Seed Starter: As you saw, so shall you reap.", February 18, 2010, Washington Post,


http://www.richmondgrows.org/how-to-use-library.html Richmond Grows Seed Lending Library, Richmond Public Library, 325 Civic Center Plaza, Richmond, CA 94804