



# How to start seeds

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Master Gardener Foundation of Cowlitz County

# PLANT SALE

&

# TOMATOPALOOZA

Saturday

MAY 16

8 am - 4 pm

Great variety of  
vegetables, herbs,  
garden plants,  
and MG crafts;

TOOL SHARPENING  
Fantastic RAFFLES  
Gardening questions  
answered



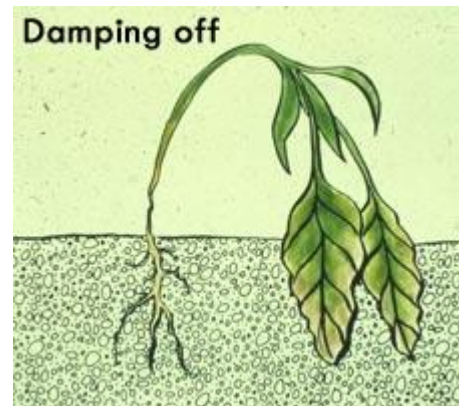
Master Gardener Program

WASHINGTON STATE UNIVERSITY  
EXTENSION

Floral Building, Cowlitz County Fairgrounds  
Longview WA

# Start with sterile seed-start mix

- Sterile mix is light, fluffy, dries out easily
- Sterile mix helps prevent “damping off”
  - Pathogens from water, hands dirty pots
  - Cold, damp conditions



# Preparing sterile seed start mix

- Dump a 12 Qt bag into a 5 gallon bucket
- Add about ½ gallon hot tap water
- Mix well with hands. Mix should hold together and feel like a wrung out sponge
- Fill the 3.5 inch pots to the very top



# Planting the seeds

- You can either plant 2-3 seeds per pot, or 15/20 seeds per pot
- Place desired seeds on top of soil, gently brush over them to cover shallowly
- Take another pot and use the bottom of it to tamp down the soil until soil level is about  $\frac{1}{2}$  inch from the top of the pot.
- Check to make sure the seeds are covered

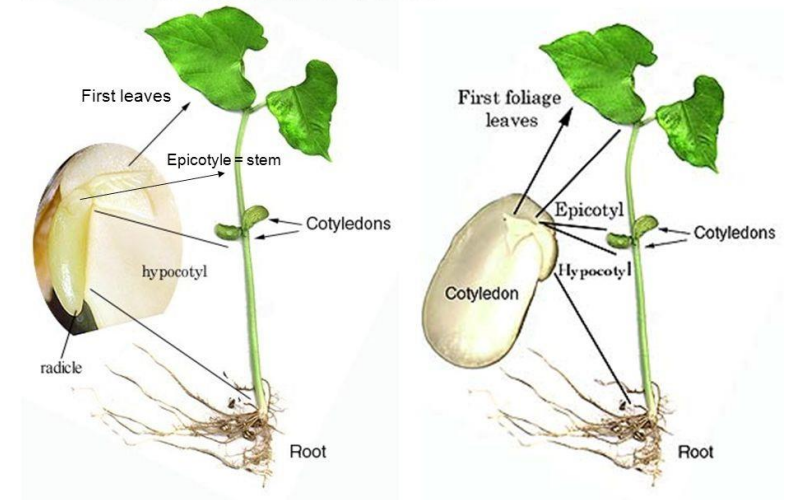
# Next...

- Plant as many pots as you'd like
- Gently cover with plastic to retain moisture (remove after seedlings pop up!)
- Place pots on tray, pour about ½ inch warm water into tray
- Water should wick up into the seed mix within an hour. Drain off any remaining water after an hour.
- Use your built in hydrometer—your finger. Is the soil moist? Add more if necessary. Avoid overhead watering on delicate seedlings.
- Place is a WARM place—heat mat or top of refrigerator

# And then...

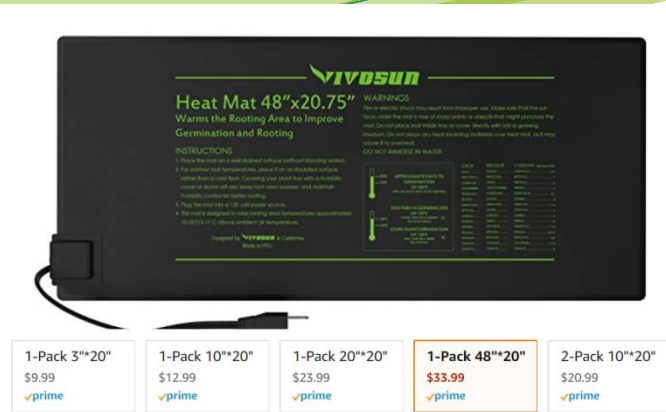
- Check every day. Flip over the plastic . Remove plastic after plants pop up.
- When your seeds germinate, you'll see the stem, then the "seed leaves," followed by the "true leaves"
- You'll need to continue keeping your seedlings warm (55-60°F night temperature and a 65-70°F day).
- They need light. 12-16 hours of it. 1-2 INCHES above the seedlings!

Parts of a bean seed



# Keys to healthy plant starts

- Sterilize all used pots
- (Wash pots with soap/hot water to remove soil, place in “bath of 1 part bleach 9 parts water for 10 minutes.
- Use NEW potting mix to fill trays
- Clean all tools
- Use a heating pad under trays to warm soil to 70-80°F for indoor plant production.
- Wait until garden soil has reached optimal temperature before planting outdoors (usually >50 degrees)





# Keys to healthy plant starts: watering

- Water to keep it **moist but not soggy**. Use pots with drainage holes. I prefer to water from below. Find that sweet spot—more plants are killed from overwatering!
- Keep hoses and water heads off the floor.
- Use clean **WARM WATER** (68 – 77 F)

# Under-watering

- You can't look at the soil and discern that it's too wet - let your plants show you those signs:
  - Foliage starts to droop or become limp
  - Foliage turns pale
  - Seedlings lack vigor



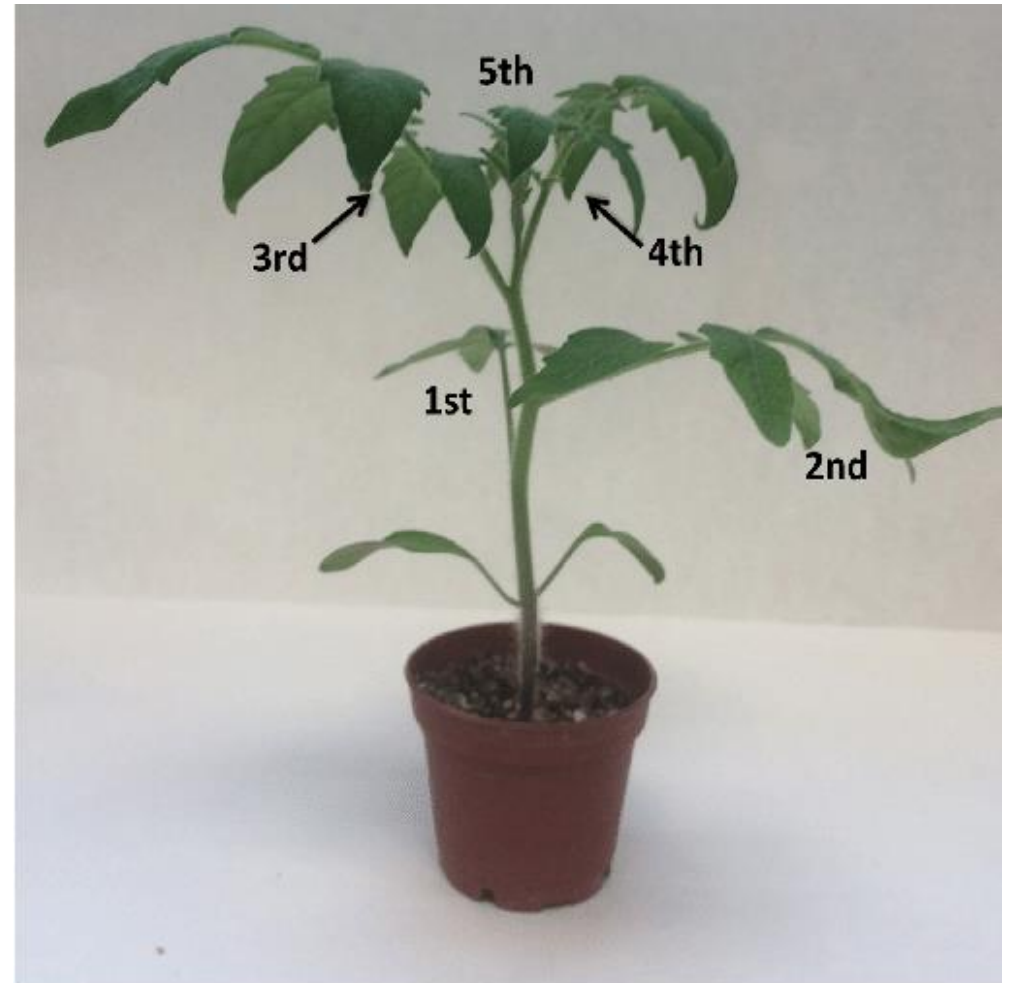
# Over-watering

- Symptoms of too much and too little water are often very similar.
- Seedlings that lack water:
  - Can be limp
  - Lack vigor
  - Foliage turns yellow
  - Foliage will look dry



# Keys to healthy plant starts-nutrition

- When seedling has 2 or 3 sets of true leaves--about 6 weeks--complete **water soluble fertilizer at 1/4 strength once a week**.
  - I like fish emulsion (around 5-1-1 N-P-K)
- If you need to water again during the week, use lukewarm water only

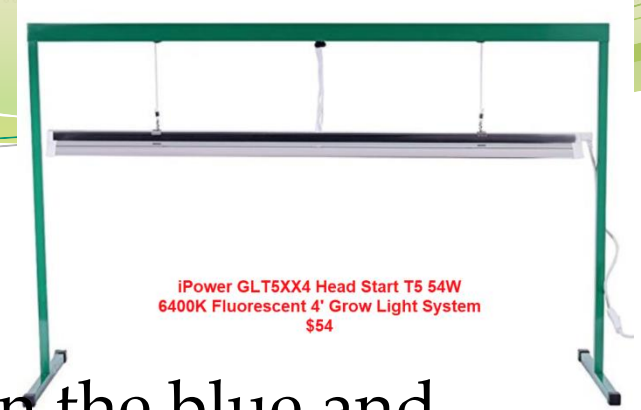


# Keys to healthy plant starts-light

- Provide **12-16 HOURS OF LIGHT** from a fluorescent or grow light
- A combination of cool white and natural daylight tubes provides good light for plants—
- **Must be 2 inches above the TOP OF THE SEEDLINGS—NO MORE THAN INCHES ABOVE SEEDLINGS.**

# About lighting

- **Cheap:** Cool, white tubes (40 watts) produce light in the blue and yellow-green and are okay for greens & veggie transplants
  - can produce healthy, stocky salad greens and vegetable transplants.
- **More \$\$** full-spectrum fluorescent tubes (“grow lights”) produce a balance of warm (red) and cool (blue) light.
  - Thicker stems, better leaf growth, flower production.
- Some gardeners use **one of each**.
- **LEDs:** Cheap → expensive



# Keys to healthy plant starts-Air flow

- Help to prevent fungal disease  
“Damping Off”

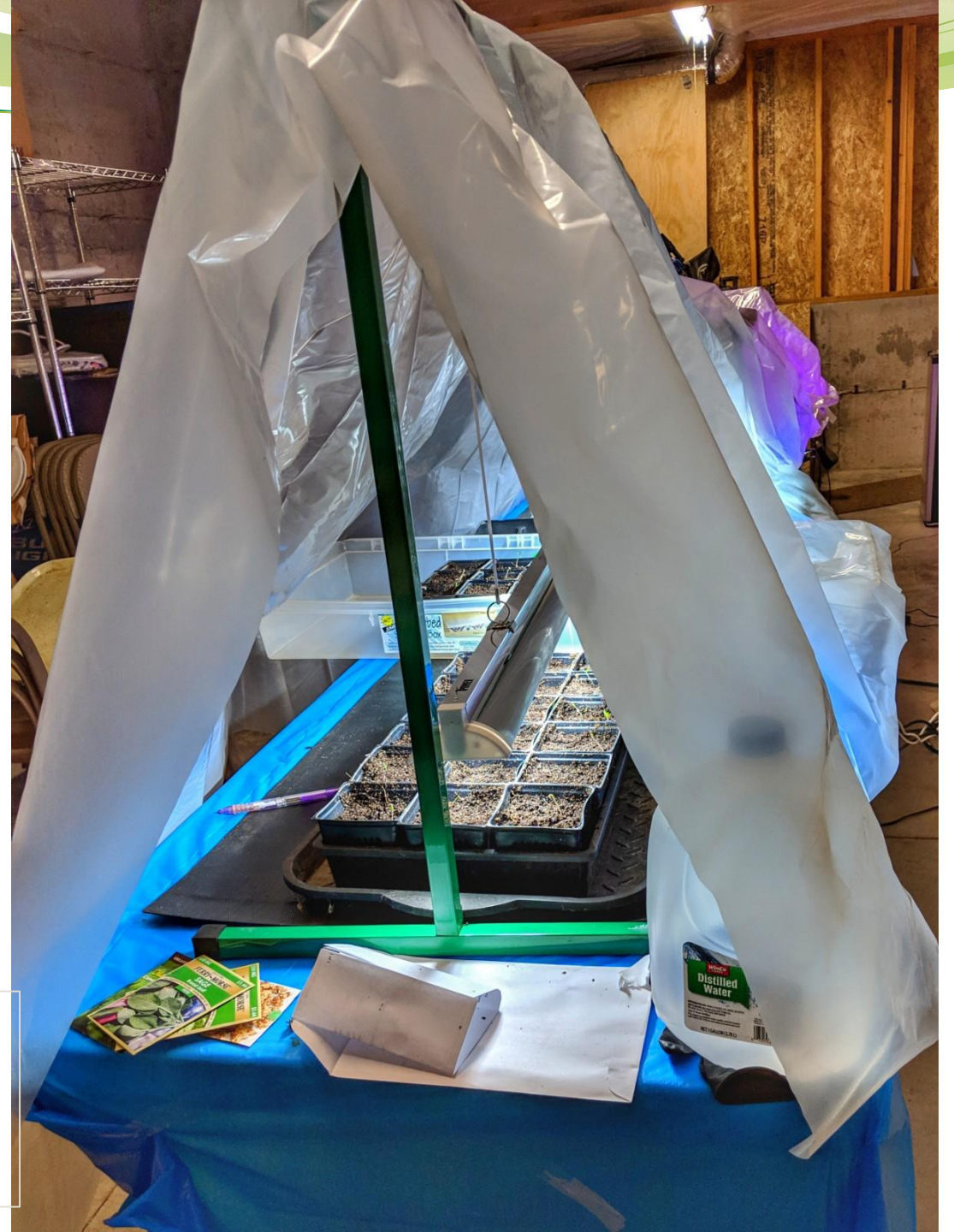


<https://hort.extension.wisc.edu/articles/damping/>





Clip-on fan at one end to keep air circulating to help prevent damp rot (fungal disease).







# What next?

- Transplant into a larger pot when seedlings are 4-5 inches tall.
- Plastic cups with holes punched in their bottoms work well.
- Lift seedlings by the rootball using a spoon or plant tag for support if necessary.
- Never hold the seedling by its stem, as you may crush it, or harm the growing tip.
  - If you feel the need to steady the plant from above, lightly hold the plant by a leaf.
- Tomatoes—PINCH OFF all the leaves except the newest 2-4 leaves, BURY THE STEM and roots UP TO THE TWO LEAVES



# Germination information for selected plants

Plant	Approximate time to seed before last frost date (weeks)	Time seeds need to germinate (days)	Temperature (F)	Light/dark requirement
Broccoli	8	5 to 10	70	Either
Cabbage	8	5 to 10	70	Either
Cauliflower	8	5 to 10	70	Either
Cucumber	4 or less	5 to 10	85	Either
Eggplant	8	5 to 10	70	Either
Lettuce	8	5 to 10	70	Light
Muskmelon	4 or less	5 to 10	85	Either
Pepper	8	5 to 10	80	Either
Squash	4 or less	5 to 10	85	Either
Tomato	6	5 to 10	80	Either
Watermelon	6	5 to 10	70	Either

# Troubleshooting-No Germination

**If your seeds aren't germinating, some reasons include:**

- **Seeds are potentially too old.**
- **Seeds are planted too deep.**
- **Soil is: too wet, too dry, too heavy, or compacted**
- **Soil was out of preferred germination range.**
- **Seeds may have needed special treatment.**
- **Seeds were poor or inferior quality.**

# Troubleshooting-Damping off

## **Prevention:**

- **Use lightweight, sterile soil. Garden soil is likely to contain the pathogen which causes damping off.**
- **Start with clean equipment and containers.**
- **Remove the humidity dome or cover as soon as seeds have germinated to prevent humidity around the tender sprouts.**
- **Provide good - and constant - air circulation.**

# Troubleshooting-Leggy Seedling

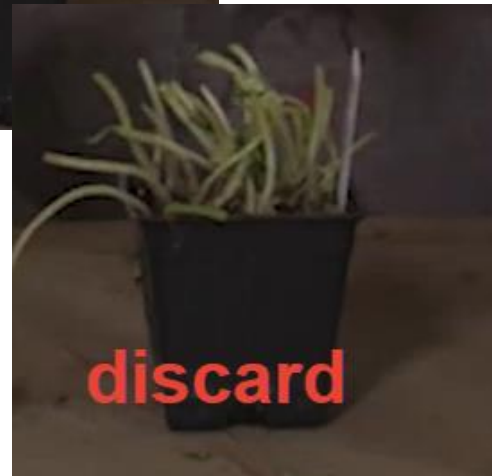
If seedlings grow leggy, stretched and thin; it can be caused by:

- Humidity dome or cover
- Weak light volume
- Excessive fertilization
- Over watering
- Over crowding



# Troubleshooting-Leggy Seedling

- Snip ‘ Dip—Cut them in half! Snip the top of the leggy seedling, discard the stems and roots
- Root cuttings in water—roots in one week!





# Troubleshooting-Leggy Seedling

- Transplant 2 weeks after Snip 'n Dip



# Troubleshooting-Stunted Growth

- Nutrient Deficiency
- Excess Salt Content
  - Can occur if using coconut coir harvested near ocean
  - Run water through soil medium for 15-20 minutes
- Excess light- growth will stop
  - Also dried, discolored leaves
  - More distance between lights and plants
  - Timers to adjust light

# Troubleshooting-Discolored foliage

## Discolored Foliage

- Seedling foliage can start to look discolored, and that can be caused by:
  - Nutrient deficiency-
  - Yellow — low nitrogen, soil too dry or too wet.
  - Red underside of leaves, phosphorus deficiency-
- Give seedling mild fertilizer with high middle number NPK



# Troubleshooting-Discolored foliage

- Bleached white or tan—light is too intense, especially if top leaves are bleached.
- \* Improper soil moisture » Excess light—adjust lighting time and distance
- Excess heat can also cause pale leaves—greater separation from lights

# Troubleshooting-Wilting

- Transplant shock—root disturbance
- Be careful when transplanting—they'll recover within 48 hours



# Troubleshooting Hardening off

- Sun is POWERFUL
- Leaves will look bleached.
- Dappled sunlight for 20, 40, 60 minutes on successive days, gradually increasing over the period of about a week.

# Troubleshooting Brown leaf margins

- FERTILIZER BURN!!
- Apply fertilizer at  $\frac{1}{2}$  or  $\frac{1}{4}$  strength
- Stop fertilizing, flush pot with water.
- Within a week, new foliage should look good.

# Troubleshooting Insect pests

## Fungus gnats

- Usually don't damage seedlings
- Ease off on watering - don't allow the soil surface to remain wet.
- Buy yellow sticky traps, or make your own using yellow index cards coated with Vaseline (much safer for beneficial insects)

