

## SEATTLE SPROUTS GREENHOUSE MANUAL

*The Ballard* greenhouse, also called Ballard Sprouts, is part of the Seattle's Giving Garden Network project. SGGN runs under a fiscal sponsorship agreement with GROW (formerly P-Patch Trust) which is a 501c3 non-profit. Messages can be sent to [info@sggn.org](mailto:info@sggn.org). The website is SGGN.org. For more information about SGGN see: <https://www.sggn.org>  
For more information about the SGGN fiscal sponsor see: <https://www.grownorthwest.org>

The Ballard greenhouse is in the backyard of Michael Hagen. Please respect his privacy. Be very careful to close the gate completely so that the dogs do not escape.  
This manual was originally created by Agnes P. Cwalina for the Ravenna greenhouse in 2014. It has been modified by Kit Hitchcock in November 2022 to reflect the Ballard greenhouse procedures.

### BALLARD SPROUTS SCHEDULE

Yearly Schedule, the dates are approximate depending on weather and growing conditions.  
September – Decide what supplies are needed, shop for them in Sept & Oct, especially the seeding soil. Decide how much to grow. Decide what seeds to order.  
December – Plan and order seeds (see seed ordering spreadsheet)  
January – Email all existing volunteers to ask if they will be continuing (see spreadsheet of volunteers)  
January – Email an introduction to new volunteers (see sample emails)  
January – Review all additional supplies and order as needed (see supplies sources document)  
February 10<sup>th</sup> – Prepare greenhouse, white board, and soil for germination  
February 14<sup>th</sup> – Start germinating seeds, tend germinating plants  
March 1<sup>st</sup> – Schedule and train new volunteers in transplanting procedures  
March – Prepare soil for transplanting, start transplanting as the trays are ready and germinate more crops  
March – end of April – Tend plants (water, fertilize, cover, uncover)  
April 1<sup>st</sup> – Email Giving Gardeners about 1<sup>st</sup> pick-up of plants (see sample message)  
April 5<sup>th</sup> – Plant beans, cucumbers, Basil, squash, scallions  
April 8<sup>th</sup> – First set of plants available for pick-up  
April 10<sup>th</sup> – plant Tomato seeds  
April 15<sup>th</sup> - Put transplanting soil in 1,000 pots for transplanting tomatoes, 1 per pot  
April 18<sup>th</sup> – Email Giving Gardeners about 2<sup>nd</sup> pick-up of plants  
April 25<sup>th</sup> – Transplant tomatoes  
April 26 – May 5<sup>th</sup> Second set of plants available for pick-up  
May – Tend tomatoes (water, fertilize, cover, uncover)  
May 20<sup>th</sup> – Email Giving Gardeners about picking up tomatoes and Basil  
May 30<sup>th</sup> – Tomatoes and Basil available for pick-up  
June 1<sup>st</sup> – Submit all invoices to Peggy Murphy for reimbursement  
June – Celebration potluck

### WHITE BOARD with volunteer instructions

There is a whiteboard with the planting/watering/fertilizing activities for the week. When you complete one of the tasks (plant 1 tray of lettuce seeds, for example) then update the white board to reflect what has been done.

### BALLARD SPROUTS 3-RING BINDER/JOURNAL

There is a white 3 ring binder in the Ballard greenhouse. This binder/journal sections contain:

1. List of volunteers with their contact information and their schedule.
2. Sign-in sheets to log volunteer activities. Please sign-in with the date/time, greenhouse temperature, and document your activities when you are done.
3. Planting/transplanting sheets organized by crop. Please enter the date under the crop name when the seeds are planted. For example: if you have planted the first tray of lettuce, enter the date next to the '1'. If you have transplanted some or all of the plants from the first tray of lettuce, enter the number of pots you transplanted from that tray in the columns to the right. Continue to document the number of pots taken from the tray until the tray is empty. Then draw a line through the rest of the columns.
4. This Greenhouse manual is in the 3-ring binder.
5. Sheets of Preprinted Avery labels for labeling the plants.

### MATERIALS FOR GROWING STARTS

seeds	clear domes
seed starting mix	3.5" pots
potting soil	propagation mat
labels and pencil	transplanting utensil
water mister	fish fertilizer
seed starting trays	greenhouse journal
mesh flats	

### GERMINATING SEEDS

For **broccoli, chard, collards, kale, lettuce, mustard, jalapeno, tomatillos, tomatoes, and basil**

1. **PRE-MOISTEN SEED STARTING MIX.** Mix seed starting mix with water in a bucket until it is the consistency of a wrung-out sponge.
2. **FILL TRAY.** Fill seed starting tray with moistened seed starting mix, leaving about  $\frac{1}{4}$  " of space from the top. Smooth out the mix.
3. **SOW SEEDS.** Slowly and deliberately sow about 100 seeds (13 rows of 8 seeds each works well) of one seed variety per tray. We changed this to about 200 seeds per tray (17x12). The seeds are placed on top of the seeding soil. For small seeds dip a pencil tip or eraser in water and then

touch a seed, it should easily cling to the pencil for easy sowing into the seed starting mix. For larger seeds just place each seed individually.

4. Sprinkle dry seed starting mix on top of seeds to barely cover the seeds, about  $\frac{1}{4}$  inch; in general plant seeds three times the width of the seed. Press the soil firmly and gently to make contact between the seeds and the soil.



Seedling spacing is perfect for allowing each plant to have adequate room to grow.

5. *LABEL*. Write date and seed variety (cut long labels in half) ex: 2/23 Outredgeous romaine lettuce
6. *WATER*. Use water mister. The soil covering the seeds should be the color of the pre-moistened soil in the planting tray.
7. Remove the mesh flat under the seed starting tray so that the tray sits directly on the mat. The mesh tray is used to stabilize the seed starting tray so that it does not crack. Seed starting trays do not have holes in them.
8. *PLACE CLEAR DOME OVER TRAY and PLACE TRAY ON PROPAGATION MAT*. Check mat to make sure it is set at 65 degrees (Michael uses 70 degrees), it is thermostat regulated.
9. *RECORD*. Record what you worked on in the seedling record and in the greenhouse journal.
10. *WATER AS NEEDED*.

### GERMINATING SEEDS

For scallions, beans, cucumbers, summer squash, and winter squash. *USE POTTING SOIL ONLY AND PLANT in 3.5 inch pots directly*

1. *PRE-MOISTEN POTTING SOIL*. Mix potting soil with water in a bucket until it is the consistency of a wrung-out sponge. Often times it is already moist enough.
2. *FILL 3.5" POTS*. Fill 18 pots with potting soil  $\frac{3}{4}$  the way full. Place 18 per mesh flat.
3. *SOW SEEDS*. Plant 10 scallion seeds per pot, on the surface of the soil.  
Plant 3 cucumber or squash seeds per pot, approximately 1- $\frac{1}{2}$ " deep.  
Plant 5 bean seeds per pot, approximately 1- $\frac{1}{2}$ " deep.
4. *COVER SEEDS WITH POTTING SOIL*. If needed, add a tad of soil to cover seeds. Exception: cover scallions with a thin layer of seed starting mix.
5. *WATER*.
6. *LABEL*. Label each pot with crop and variety, identify if a squash is summer or winter variety. ex: summer squash patty pan

7. Remove pots from mesh flat and place pots on the propagation mat individually but grouped together so a dome will fit over them. Check mat to make sure it is set at 65 degrees (Michael uses 70 degrees), it is thermostat regulated.
8. *PLACE CLEAR DOME OVER POTS.*
9. *RECORD.* Record what you worked on in the seedling record and in the greenhouse journal.
10. *WATER AS NEEDED AND FERTLIZE PER SCHEDULE.*

## GROWING

1. *REMOVE DOME AND TAKE OFF PROPAGATION MAT.* As seedlings start to emerge, when at least 50% of seeds have popped through the seed starting mix, remove dome for better air circulation. Cover at night. Move off propagation mat when  $\frac{3}{4}$  have germinated (or unplug the mat if there is no need for it).
2. *WATER.* Keep trays moist but not over-watered. Stick your finger in the mix to check for moisture. It is OK to let them dry out between watering but not to the point where the seedlings get droopy. On sunnier days, watering importance increases.
3. *(THIN.* If needed, use a scissors or pinch-off crowded seedlings. Do NOT pull them out by the roots. By sowing deliberately we hope to avoid thinning plants.) Ballard Sprouts does not thin even if there are 200-300 seedlings in the tray, all are used.
4. *PET THE PLANTS.* Run your hand over the seedlings. This action may help stimulate growth and will also increase air circulation, preventing fungal disease.
5. *SCALLIONS.* Once scallions grow to 3" tall, trim them down to 1," this promotes stem growth.

## TRANSPLANTING

It is time to transplant to a 3.5" pot when seedlings develop their first set of "true leaves." The leaves that first appear are cotyledons and will eventually die and fall off. They usually have a different shape than true leaves. Choose the seedlings that look healthy, but not tall and leggy. The less you disturb the roots, the less shock the seedling will experience during the transplanting process.

1. *FILL 3.5" POTS.* Fill eighteen 3.5" pots 2/3 full with Cedar Grove potting soil and place in a mesh flat.
2. *MAKE A DIBBLE.* Use a butter knife and make five dibbles (holes) in the potting soil for seedlings. EXCEPTIONS: tomatoes will be transplanted only 1 per pot, tomatillos 2 per pot, and basil will be transplanted three per pot.
3. *PRICK-OUT.* Use the butter knife to gently pry or scoop the seedling from the tray. Hold the seedling by a cotyledon leaf, **not** by the stem or roots. If the root ball is in a tight coil, gently shake to loosen the roots.
4. *PLACE IN HOLE.* Place seedlings in each of the five holes. Continue to hold by the leaf letting the roots dangle. Plant the seedling so the soil comes up to or slightly buries the cotyledon leaves. Backfill with soil and tamp-down gently around the stem. Add another handful of soil to top-off if necessary. \*TOMATOES can be planted as deeply as their roots will allow.



The pot on the left is correctly transplanted: note true leaf growth, soil level in pot, and burying seedling up to cotyledons. The only thing to do differently is to plant 5 seedlings per pot.



Another example of how deep seedlings are to be buried in soil.



The pot on the left is correctly transplanted with a tomato seedling, as deeply as the roots allow.

5. *REPEAT*. Transplant five seedlings per pot.
6. *WATER*. Water the newly transplanted seedlings.
7. *LABEL*. Put a label in each 3.5" pot. Place the preprinted crop name on the white plastic labels and the put one label per pot.

*RETURN TRAY TO SHELF*. Place the mesh flat filled with 18 labeled pots on the sawhorses and 2x4's. Cover every night. Cover on days when it is raining hard, or the temperature is in the 40's and rainy. Uncover when the temperature is in the 50's, watch for hail storm.

8. If the temperature drops into the 20's then cover with two layers of row cloth. Keep the pots watered and covered based on the outside temperature.
9. *RECYLING USED SEED STARTING MIX*. Put used seed starting mix in with the transplanting soil. You can recycle and mix small amounts of this with the potting soil for transplanting. DO NOT USE IT AGAIN FOR SEED STARTING; it could spread disease to new seedlings.
10. *LOOK FOR PESTS AND KEEP PETTING THE PLANTS*.
11. *WATER AS NEEDED AND FERTLIZE PER SCHEDULE*.

### **FERTILIZING**

Have one person in charge of the fertilizing.

Fertilize about 5 days after transplanting. Look at the plants, do they look like they have recovered from the shock of transplanting, are they upright? Fertilize with a 2 gallon watering can and 2 oz of FishPoop. After fertilizing go back and water all the plants that were fertilized. This washes the fertilizer into the soil and off the leaves.

Then fertilize 10-14 days later. Then again 10-14 days later. Fertilize about 5 days before distribution.

### **HARDENING-OFF**

Continue to water, fertilize, cover and uncover the plants until they are ready to be planted. Notify the Giving Gardeners when the plants are read to be picked up.

### **THERMOSTAT**

- Thermostat should be plugged in when propagation mats are in use and set to 65F. (Michael uses 70 degrees).
- Thermostat sensor should be buried in the monitoring pot to ensure proper soil temperature.
- Thermostat coil should be minimally moved to prevent breaking.

### **LIGHT**

We do not use grow lights. During germination the plants need heat. During growing and hardening-off the plants need sunlight.

### **PEST AND DISEASE PATROL**

If you see something out of the ordinary, please write a note in the journal and make others aware of it.

- *APHIDS*. They appear as soon as it warms up just a bit. Squish them with your fingers or knock and wash them off with a brush and water. They come in different colors: peach, light green, black. Find them on top of and underneath leaves and on stems. They leave a sticky residue on the plant and often attack new growth, flowers, and flower buds.

- **WHITEFLIES.** If they show up, we can try trapping with yellow sticky tape.
- **DAMPING-OFF DISEASE.** This is a fungal disease that may be caused by crowding, poor air circulation, and over-watering or contaminated soil mix. It can cause a few seedlings to die or wipe out an entire tray. Discard the tray contents in the garbage. Do NOT reuse the seed starting mix. Rinse out the tray before using it again.

#### OTHER PLANT PROBLEMS

- **Leggy seedlings.** Possible causes: insufficient light, crowding, or excessively high temperatures.
- **Leaf curl.** Leaves curl under, especially in bright light. Could be caused by over-fertilization. (Not to be confused with leaf curl on tomatoes after they get bigger.)
- **Yellow or pale leaves.** May be caused by over or under-fertilization. If seedlings have not been fertilized after development of true leaves, leaves may yellow or turn pale.
- **Purple-veining on undersides of tomato leaves.** Possibly caused by nitrogen deficiency. Check fertilization dates.
- **Mold on surface of soil.** Could be due to poor drainage, over-fertilization, and/or lack of air circulation. Not a big problem, but could be a red flag for something else.
- **Small plants:** Late fertilizing, cold weather, insufficient watering
- **'Burnt' plants:** Most likely caused by fertilizing. Water plants after fertilizing.