

Seedling Bin = High Humidity Chamber

Even with a large greenhouse at my disposal, there are situations where conditions need to be improved for certain plants. This specifically applies to de-flasking orchid seedlings, and getting them through the first 6 months without losing too many.

Freshly de-flasked orchid seedlings, and meristems:

- A. Come from an environment with 99% relative humidity. Whether you use plug trays or compots, these baby plants do not tolerate drying out till they have become established outside of the flask, and have started to grow new roots.
- B. Need lower light intensity than the NBS & BS plants of the same genus.
- C. Need slightly higher temperatures than the NBS & BS plants of the same genus.

For the past 20 years I have grown my plants 'long distance' in rented greenhouse space. With a 50-75 mile roundtrip to the greenhouse, I can't go every single day, so I needed a method to coddle these young plants through 2-3 day absences, occasionally stretching as long as 2 weeks (business trips & vacation).

I have had a great deal of success using what I call my 'seedling bins' (you might call it a 'high humidity mini greenhouse'), created out of clear plastic storage containers:

- A shelf holds the pots 2-3" above the bottom of the bin. When I water, the drip-through collects in the water reservoir in the bottom.
- A drain hole allows any excess water to drain out before it rises to the level of the shelf.
- The clear lid reduces the amount of light coming through to the plants.
- When needed, I place the bin on a seedling heat mat to raise the temperature in the bin by about 10°F over the ambient temperature.



Originally I could not find bins with clear lid, so I had to cut the center out of the opaque lid and attach shade cloth (this photo = 2nd generation model).

Subsequently, I have encountered several other situations, where these seedling bins have helped im-

prove plant growth & seed germination.

- ⇒ When we had an invasion of rodents, they could not attack the plants in the bins (as long as the drain hole was not too large). I now cover the drain hole with a metal mesh to prevent unauthorized entry (attach with large head screws).
- ⇒ When I purchase bare root plants, they are often somewhat desiccated. After potting up, they recover much faster in a seedling bin.
- ⇒ Plants coming in from Hawaii are often in tiny pots (2" short or 2¼" rose pots) with just a few bark nuggets. These dry out much faster than plants in 3½" (or larger) pots full of medium. When grown in a seedling bin, I can water these young plants at the same schedule as all the larger plants in the large greenhouse.

Vanda & Renanthera in 2" pots from HI



Cattleya in 2" pot from HI:



- ⇒ When I pot up Hawaiian Cattleya into 2½" pots, I use the seedling bins for the first year to get the plants started. If plants get to be too tall, I just leave the lid off (see photo on next page).



⇒ Since 2022 I have grown *Clivia miniata* on a large scale. Normal germination rate for *Clivia* seed is about 70%; I am achieving 98% germination using the seedling bin. Seed sown on 082925 is shown well germinated by 120625.



⇒ I grow my 3" *Sarcochilus*, which is a very low light plant, this way in the greenhouse now - eliminating the need for extra shade cloth.

Based on my success in these areas, I believe that these bins would also be helpful when growing young *Paphiopedilum* & *Phalaenopsis* in the home environment. The large bins can hold 24-30 plants in a mix of 3" & 4" pots.

This solution should also be useful for 'under lights' growers, who can simply suspend 24" fixtures above the bin (without the lid).

I buy the largest plastic storage containers **with clear lid**, that I can find. For a while Staples had one on sale for \$12.99 (it is now about \$18), it is 16" wide & 25" long (inside dimensions).

More recently I found this one at Walmart for \$14.98:



16 1/4" wide & 27" long (inside dimensions), once set up it provides approx. 10" high growing space.

To create your seedling bin:

Step 1: Drill 6 holes for shelf carriers, about 2 1/2" up from the bottom of the container. I cut one set of holes 4" in from either end, plus one set in the center.

I use 1/2" PVC pipe, which requires a 7/8" hole. I use a spade type drill bit (a hole saw or regular bit would probably work as well).



Once the tip cuts into the plastic, only apply the slightest pressure (let the weight of the drill do the work); if you apply too much pressure you will crack the wall.

For use in the greenhouse, I also drill one drain hole about 1.3/4" up from the bottom in one end. For use in a house, either drain with a siphon when necessary, or add a compression fitting to add a drain tube with a small ball valve.

Step 2: Buy one 1/2" PVC 10' pipe (makes 6 shelf carriers, when cut to 18-19" lengths). To avoid the carriers slipping out of position, you can add an end cap on either end.

These are less than one dollar each.



Step 3: Cut a shelf to size.

You can use a section of a 16" metal wire closet shelf (cut with a hack saw), though this is not ideal for very small pot sizes (openings are too large). For use with larger pots it is fine.



For 2" & 2.1/2" pot sizes, 1/3 of an eggcrate sheet (24"x48", used as a diffuser over recessed ceiling lights, \$20 at Home Depot) provides better support.



It is a perfect fit for the Staples box, but about 3" short in the Sterilite box. In the latter, you can either build a platform with spacers to fill the gap, or simply have pots in the end rows lean against the end wall, straddling the void.

I close the clear cover on these bins to maintain maximum humidity.

- For *Clivia* seed (closed lid), I only water once every 4-5 weeks.
- For orchid seedlings it varies with the pot size, but I often stretch it to 10-14 days between waterings.

Once the seedlings are well established, I vent the cover (snap it on at one end of the bin, and prop it open with a small pot or a section of a plant tray at the other end).



In Hawaii, small *Cattleya* are grown in a tiny net pot, inside a 2" short pot. There are 2-4 small bark nuggets in the net pot, which does not hold much moisture (photo on page 1).

I transfer the net pot to a 2.1/2" pot and fill the pot with seedling size bark mix, and let them enjoy life in a seedling bin. The bin in this photo holds sixty 2 1/2" pots.

After 18-24 months, they will go into 3 1/2" pots, where they will stay till they start blooming. The following photo shows some plants approaching the size going into the larger pots, while the ones in the background will wait another 12-16 months.



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- * While I do not have photos to document this yet, I am in the process of expanding the seedling bin treatment to *Paphiopedilum* in general. Many *Paphiopedilum* come in from Hawaii in 2.1/4" rose pots, filled with a very coarse mix of bark & sponge rock. In these pots, the plants need much more frequent watering than anything else. In the bins I do not have to water them as frequently, and I will not have to worry about shading, as the lid will reduce the light intensity.
- * With the conditions in my greenhouse, I have never even tried to grow cloud forest plants (*Masdevallia*, *Lepanthes*, etc.). Considering how short these plants are, I believe that seedling bins could be suitable for growing that group of plants in the home.

That I am working with the large bins is a reflection of how many plants I typically propagate & grow. For home use, you might want to scale things down as necessary.

And, plants do bloom in these bins. This past summer I found large seedlings from two crosses with flower spikes in the bin, *V. (christensoniana x aurantiaca)* and *Holcoglossum vangii*.



The next photo shows 37 small *Vandas*, which came in bare root and somewhat desiccated. 25 are in 3" net pots, and 12 in 3.3/4" net pots, all are in pure sphagnum, packed finger tip tight.

After 6 weeks they are looking better, and they will be released for sale in another 6 weeks or so. These are all species and NBS.