

Abronia/Tripterocalyx germination and growing protocol

Eric LoPresti, 11/2017

"[*Abronia*] are so ungrowable that they must constitute one of the gardening life's major disappointments; even germinating them from seed is difficult... and is probably best left to the few magicians who have mastered the arcane art of propagating these plants" R. Nold – *High and Dry: Gardening with Cold-hardy Dryland Plants*

"Germination success is typically low (~5%)" Doubleday *et al* 2013

Just follow these easy steps and <\$30 of supplies, and I'll make you into an *Abronia*-grower par excellence! (But seriously, huckster-ing aside, using this method, which is a tweaked version of Phillipa Drennan's, I generally have >90% germination of good seed).

Sand verbenas have a weird reputation as ungrowable, even the conservatory here at Davis had given up on them. However, they really aren't hard to grow.

Things you will need:

- Ethephon Solution. I use Monterey brand florel growth regulator. Its ~\$25 on Amazon for 32oz and worth every penny. If you can get ahold of a smaller container, all the better.
- Petri dishes
- Paper towels
- Ziploc bags
- Spray bottle
- Forceps
- Various instruments of destruction – including, but not limited to – nail clippers, small scissors, razor blades, big scissors, etc.

Directions:

- 1) Cut paper towel rounds to the size petri dish you have. Cut a lot of them.
- 2) Take out the weird fruit (achene/anthocarps). Open each one very gently – I usually use nail clippers and gently clip the edge of the opening containing the seed. **YOU DO NOT WANT TO BREAK THE SEED COAT.** Depending on the species and how large the seed is relative to the cavity, this can be very easy (*pogonantha*, *alpina*, *elliptica*, *nana*), rather difficult (*villosa*, *maritima*, *fragrans*), or maddening (*carneus*, *micrantha*).

Make sure to record the number of fruit which contain a seed and the number that don't (and do send it to me – this is very variable across species and production of parthenocarpic fruit is a cool trait).

- 3) Now that you have seeds, take 1L of DI (or RO) water, put it in your spray bottle and add between 0.66-1.0 mL of the ethephon solution to it. I usually add about 0.75 mL.
- 4) Layer the paper towel rounds, 4-5 of them, in the bottom of the petri dish. Spray down with water until they are soaked, but there is not standing water. (see photos below).

- 5) Put the seeds on the paper towel. I don't do more than ~10/petri dish, as if there is a bad seed or two, they can mold and spoil good seeds.
- 6) Cover petri dish with petri dish top.
- 7) Put petri dish in a Ziploc bag
- 8) Place plastic bags in a dark area.
- 9) Check in ~48 hours.
- 10) In an ideal world, 100% of the seeds will now have roots. If they have long (~1") roots, with root hairs, transplant (see below). DO NOT TRANSPLANT UNTIL THE ROOTS HAVE ROOT HAIRS (and lots of them). Transplanting too early kills the most plants.

Note: Transplant large seeded species (*Tripterocalyx* spp., *A. latifolia*, *umbellata*, *maritima*, *fragrans*) after their roots are quite long. Transplant smaller-seeded species (All other *Abronia* spp.) as above.



- 11) If they haven't germinated and the toweling is drier, give it another spray or two.
- 12) Check again in 2 days. Transplant if ready. Spray if necessary.
- 13) Check again in 2 days. Transplant if ready. Spray if necessary.
- 14) Check again in 2 days. Transplant if ready. Spray if necessary.
- 15) If they haven't germinated still, drastic actions must be taken. Assuming they have been marinating in the ethephon, the seed coats should be quite soft at this point. VERY GENTLY remove the seed coat with very sharp forceps without damaging the embryo. This is an art and is easier in the big seeded species.
- 16) Now place the coat-less embryos on the sheet and repeat steps 10-14.

Transplanting and growing

Unlike other folks, this is the time I lose most of the plants. Be gently with them and they will reward you.

Things you need.

- Sand – I use play sand - \$3/sq. foot at Ace
- Potting soil – I use “Edna’s Best” but really any should do.
- Vermiculite – if you have coarse sand, this is more important. I didn’t use this for 2 years and now do and it improves things, but totally fine without it (especially in a humid greenhouse – in dry lab, it helps a bit).
- Paper towels
- Forceps
- Small Pots, Big Pots. I grow them in either **a)** 4” wide, 12+” tall pots or **b)** 12” wide, ~14” tall pots. The former is better for small spaces, but needs more watching and way more pruning. They get root bound pretty quick in those, too.

Steps (these are probably completely self-explanatory)

- 1) Mix your soil – I use ~66% sand and 33% potting soil in the greenhouse. In the lab, where it is very dry, I use ~60% sand, 30% potting soil, and 10% vermiculite, to keep a little bit better water holding. Don’t treat these ratios as gospel, play around with them a little.
- 2) Wet your soil.
- 3) Place a single layer of paper towel on the bottom of the pot (to keep sand from streaming out).
- 4) Fill pot.
- 5) Make a little finger hole, place seedling in such that the junction between stem and root is at the surface.
- 6) I generally cover the plants with little deli dishes in the lab, as the seedlings are REALLY vulnerable to desiccation. I’m not sure how much of a concern this would be in a greenhouse though.
- 7) Water every 2-4 days (I do 3, usually), fertilize every 1-2 weeks. Fertilization = flowers.
- 8) Prune back aggressively when necessary.

