Ten Easy Time and Money Savers Used For Propagation in the U.S. Southwest©

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INTRODUCTION

The climate in the Southwestern U.S.A. is extremely variable. We can have low temperatures down to –7 ºC (20 ºF), but more importantly, our highs in June can reach 49 ºC (120 ºF) with a relative humidity of less than 10%. We rely on some very simple techniques to work in our environment as well as to accomplish some of the unique tasks that we have to do. We grow nearly all of our 8 million liners, collect nearly all of our seed, and grow our own cutting stock. This also raises some unique challenges.

TEN DEVICES/TECHNIQUES THAT WORK FOR US IN PROPAGATION

1) We have nearly 100 quonset houses covered with either fiberglass or with clear poly. With the high summer temperatures, most local growers will begin to remove winter plastic from a house as early as February to maintain reasonable environmental conditions in the quonsets. To save on materials cost and the labor involved to install and remove plastic, we have a simple ventilation system on the side of each house (Fig. 1). We attach a 5 × 10 cm (2 × 4 inches) stringer 46 cm (18 inches) above grade and bring the plastic only to this point and then attach a small temporary skirt from that stringer to the ground. The skirt is weighted down in winter with soil and is removed in early spring to allow free air movement and better ventilation. The summer temperatures inside these houses are surprisingly cool.
2) For years, nurserymen have insisted on using peat moss in their propagation and production mixes. While the cost of peat has become prohibitive, it is not as clean and disease-free as it was once considered. Years ago we started using redwood bark, a renewable resource, which dramatically reduced diseases and the need for using pesticides and biocides. We use redwood bark in an equal volume where we once used peat, and have had positive results with a 50% reduction in cost of materials.
3) As an amendment to our liner mix, we have been incorporating RootShield® granules (Bioworks, Inc., Fairport, New York.) It is a biological fungicide composed of the beneficial fungi *Trichoderma*. We find that with RootShield® has drastically reduced any need for subsequent application of chemical fungicides. RootShield® needs to be used as a prophylactic not as a curative. Once the new plant becomes inoculated, it will continue to be resistant to pathogens.

Figure 1. Quonset houses with side ventilation systems for better temperature control.

4) As a general clean up chemical, we use ZeroTol™ (BioSafe Systems Inc., Glastonbury, Connecticut). It is a broad-spectrum algaecide/fungicide that oxidizes and kills fungi, fungal spores, bacteria, and viruses. We dip all cuttings after they are made into a quick-dip of ZeroTol™ and on some occasions will top spray a flat to reduce disease organisms. This cleans up the cuttings we are sticking and will also stop a pathogen from spreading if we have managed to get one started via a cutting or seedling flat.
5) We collect and clean nearly all of our own seed. Many seeds we process have rather large, papery flowers, which are difficult to clean. We now use a standard shop vacuum with an extra long hose attached to it (Fig. 2). We put as many bends in the hose as possible and usually run the seed through this a few times. The corrugated hose will break-up the papery flowers and we can then sift the clean seed out. As an alternative and for harder materials,

Figure 2. A standard shop vacuum used for sucking-up seed and detaching the seed from floral structures.

we also use a leaf shredder which is actually a weed-eater mounted on top of a container. The plastic whip will then flail the papery husks apart with little damage to the seed.

6) Often if the standard shop vacuum system is not practical because of the size of the seed head, we just use a simple kitchen blender (Fig. 3). Put a handful of seed in, make a quick pulse of the blender and sometimes sow the entire pulverized mass on top of a flat for germination. You can also attempt to sieve out the seed prior to sowing.

Figure 3. A common kitchen blender used for cleaning seed prior to sowing.

7) Yes, it is important to follow a manufacturer's directions for properly using a product as it has been labeled. Much of the seed we collect is naturally infested with weevils and larvae, which use our seed as a food source. Application of insecticidal powders would eventually kill these pests, but if the insect was inside a large dried seed or fruit, it might escape until eating its fill and ruining the seed. Hence, we take a seed batch and put it into a trash bag containing a pest strip of Prozap Insect Guard™ (Loveland Industries, Greenly, Col.) (Fig. 4). We then mark the date of treatment on a label inside the bag. In a couple of weeks all of the pests are dead, and the pest strip of Prozap Insect Guard™ can be reused.

Figure 4. A pest strip of Prozap Insect Guard™ used to control weevils and insects in seed batches.

8) We collect a lot of seed with pulp on it. The solution to remove the pulp is to use a plastic bucket. Put the fresh fruit in the bucket and place it in a warm spot and let it rot. The fruit will rot off and also there are probably germination inhibitors that are leached out. A simple colander or large kitchen sieve and some running water will rid the seed of the pulpy mess.

9) Concrete walks in greenhouses are slippery and dangerous. With constant moisture and algae growth, they can become a real hazard. Some nurseries will try to prevent algae build-up with chemicals with limited success. A simple and inexpensive solution is to use roofing paper that is covered with grit, cut it to the dimensions of the walkway and lay it down. It will stay put and functional for a long period. Roofing paper is extremely effective, readily available, and inexpensive.

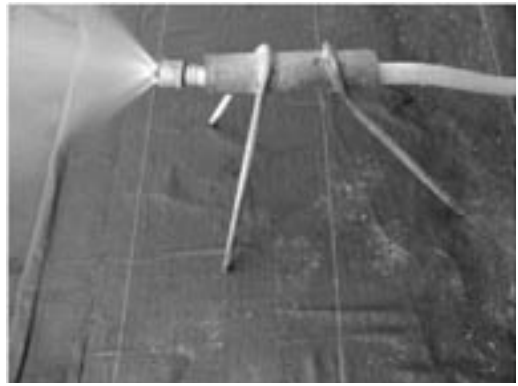

Figure 5. A portable fogging station where the hose can be threaded through with a fog nozzle to water in flats and maintain a high relative humidity to reduce transplant losses.

10) We do a lot of transplanting of seedlings and rooted cuttings. Watering-in of new transplants with a water breaker is frequently not thorough enough in the extremes of summer. As previously mentioned, our relative humidity is generally less than 10%, which can lead to high transplant losses. Consequently, we have welded together a device where the hose can be threaded through and a fog nozzle attached to the hose (Fig. 5). As the transplanter brings over a new flat, they will move the portable fogging station to the new area. Transplant losses are now extremely low.