1. **Seed germination.** Sow in mid- to late summer for flowering under short days (<12 hours) in fall through spring. Soak seeds in half strength household bleach (2.75% hypochlorite) for 1 hour. Rinse with sterile water. Optional: cut through the seed coat near the radicle end with a scalpel, or remove the seed coat entirely, to facilitate radicle emergence. Plate seeds on blue [germination paper](#). Germinate at ca. 25°C under lights. Transplant seedlings to soil in seedling trays as soon as cotyledons have opened. Grow seedlings under high light intensity and water only as needed (we use a small squirt bottle).

2. **Plant growth.** Once seedlings have several true leaves and can be removed without damaging the roots, transplant to pots, 3 plants per ½ gal pot (ca. 1.5 L volume). Seedlings of *S. sitiens* should be planted into a soil mix for desert plants – low in organic matter and fast draining. Crowding several plants per pot helps control vegetative growth and reduces waterlogging. Grow plants in full sun at ca. 18–25°C day/12–15°C night temperatures. To initiate flowering, plants should receive no more than 12 hours of light per day.

3. **Horticultural tips.** Grow plants on a low bench or at ground level to allow for sufficient stem growth (A). Use tall bamboo stakes and twine to train stems. Secure the pots to the bench with screws or wire to prevent them from falling over. Do not water *S. sitiens* unless the soil is dry.

4. **Irrigation and fertilization.** After plants are large enough to dry the pots each day, plants of *S. lycopersicoides* can be placed on drip irrigation and water frequently enough to keep soil wet and prevent wilting (twice daily for 10 mins per cycle works well for us); *S. sitiens* should continue to be watered by hand only as the pots dry. Fertilize weekly through the drip system with a dilute fertilizer (see guidelines for fertilizer). Avoid excessive fertilizing, which will promote vegetative over reproductive growth.

5. **Pollinations.** Once well established, these species flower best under short days in fall through spring. Both are self-incompatible and must be cross pollinated to produce seed. Collect pollen from all plants in the population using a [VegiBee](#) and a petri dish. These species shed copious amounts of pollen, and have highly subdivided inflorescences (B). Touching the VegiBee to an inflorescence branch is usually sufficient to release abundant pollen. Mix pollen in the petri dish, then apply to all open flowers by rubbing flower clusters in the pollen. Repeat at least twice a week while flowering lasts in order to represent all plants and produce enough seed.

6. **Seed extraction and cleaning.** Harvest fruit when they have turned from dark green to yellowish or pale green (C). The seeds should be dark brown when mature. Each *S. lycopersicoides* fruit contains only 2-5 seeds (D, bottom), those of *S. sitiens* 10-20 (D, top). Fruit of these species mature by a process of slow water loss, eventually turning into a brown, brittle shell. It’s best to collect the seeds before the fruit have lost all moisture. To extract seeds,
squeeze fruit between thumb and forefinger in a pan of water (E). Squeeze fruit repeatedly to get all the seeds out. Pour off water, cover seeds with tomato juice and allow to ferment for 2 days, or until the gel around the seeds has been digested (the fruit hulls will not break down). Squeeze fruit again to remove any remaining seeds. Pour fruit and seeds through a sieve wide enough to allow seeds but not fruit hulls to pass through. Wash under a shower head faucet attachment to rinse seeds into a pan. Decant water and pulp, retaining seeds. Repeat several times until seeds are clean. Treat seeds with acid and/or bleach, rinse in a strainer (F), then transfer to paper, spread seeds, and dry at RT under a fan.