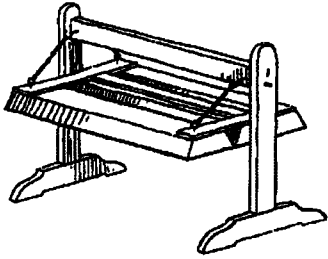


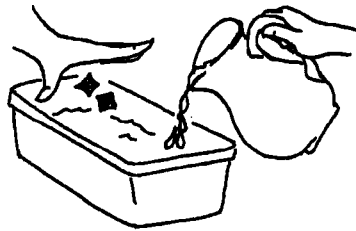
Illustrated Growing Instructions

Getting Ready

1. Set up your lighting system

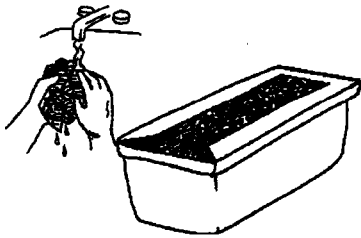


2. Fill reservoirs with water and drop in blue algae-control squares. Snap on lid.



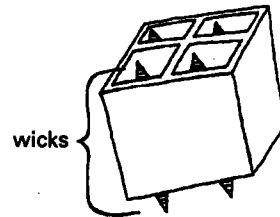
3. Saturate water mat and lay it on reservoir lid with end of mat extending into water.

Note: Be sure mat is thoroughly wet.

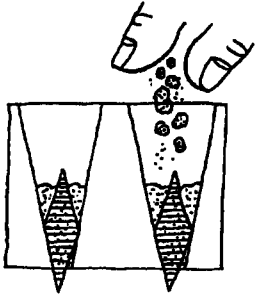


Planting: Day 1

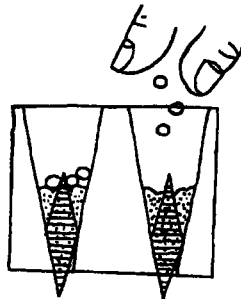
4. Drop one wick into each cell so that the tip extends halfway out of the hole in the bottom (about 2 cm).



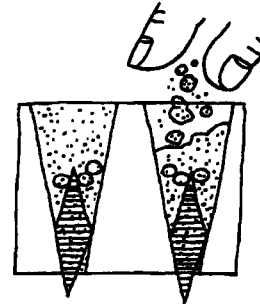
5. Moisten soil *slightly*. Fill each quad cell halfway with soil.



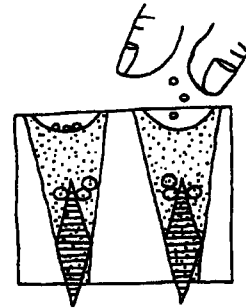
6. Add 2-3 fertilizer pellets to each quad cell.



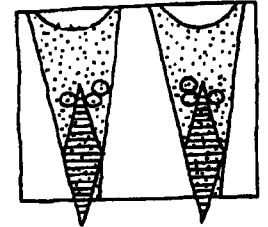
7. Fill each cell to the top with moistened soil.



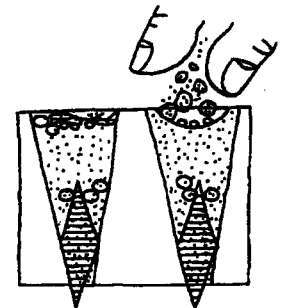
9. Drop 2-3 seeds in each depression.



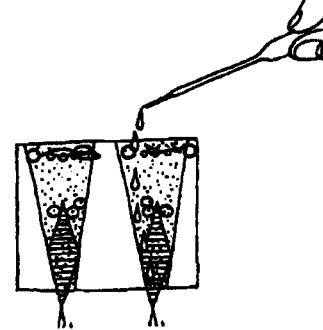
8. Make shallow depressions on top of each cell. Do not press hard and compact soil.



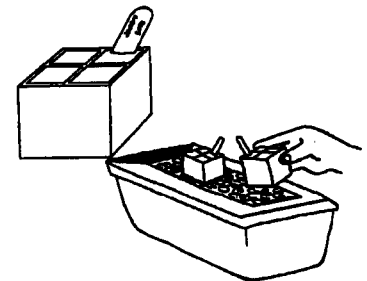
10. Sprinkle enough potting mix to cover seeds in each cell.



11. Water very gently with pipet or squirt bottle until water drips from each wick. Be careful not to wash seeds out of cells.

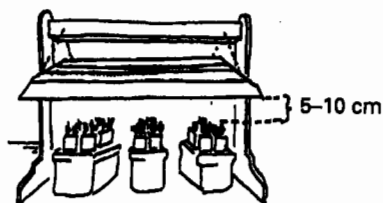


12. Label each quad with date and student's name. Place quads on water mat.



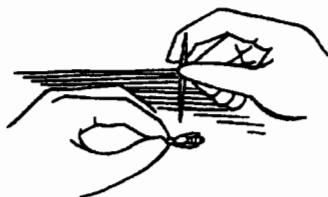
Illustrated Growing Instructions (continued)

13. Position top of quad 5–10 cm below the lights. Water from the top with pipets or a squirt bottle for the first 3 days. Remember to keep the reservoirs full.



Making Beesticks: Day 12

15. Place a drop of glue on the tip of a toothpick. Push the toothpick into the bottom of the thorax (middle section) of one bee to create a beestick.



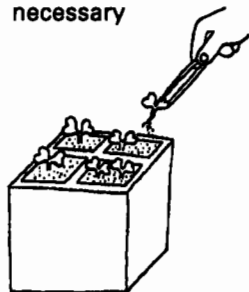
Pollinating: Days 13 to 16

17. Pollinate with beesticks by brushing the bee over flowers to pick up and distribute pollen.

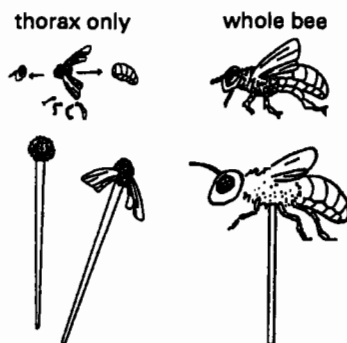


Thinning Plants: Day 4 or 5

14. Thin to one plant per cell. Transplant extra seedlings to cells without plants if necessary



16. Let beesticks dry before use.



18. Pollen must be transferred back and forth among different plants (cross-pollination). The plants do not self-pollinate.



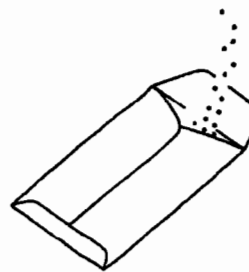
19. Pinch off unopened buds on the last day of pollination and write the date on the plant labels.



21. Twenty days after the last pollination, remove plants from water and allow to dry for 5 days.



23. Place the seeds in labeled envelopes. Store seeds in a cool, dry place.



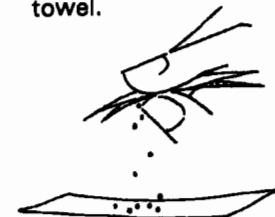
Observing Seed Pod Development: Days 17 to 35

20. After pollination, seed pods and seeds develop. Seed pods begin to elongate within 3–5 days, and flower petals drop off. Seeds mature in 20 days.



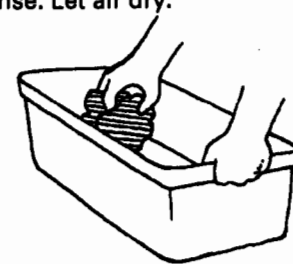
Harvesting: Day 40

22. Harvest seeds by gently rolling dry seed pods between hands over a paper towel.



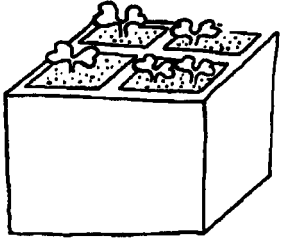
Cleaning Up

24. After harvesting, clean water reservoirs, platforms, and quads by soaking in 10% bleach solution. Scrub and rinse. Let air dry.



Troubleshooting

Poor Germination (no seedling emergence)

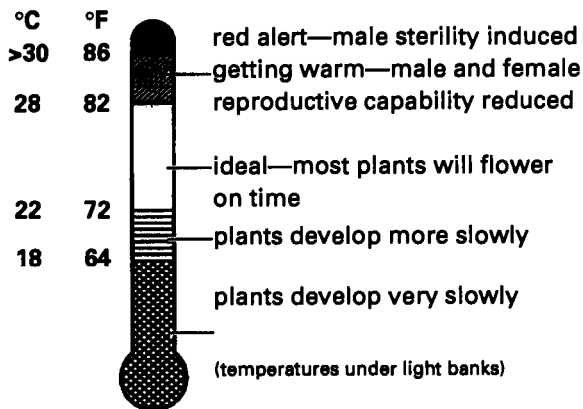


- Seeds planted too deep in quad
- Potting mix compacted, or too wet when dropped into planting container
- Quad not watered carefully from the top for the first 3 days
- Seeds washed out of quad
- Room temperature below 60°F (15.5°C)
- Fertilizer pellets were planted instead of seeds

If seedlings do not appear by day 4, start over.

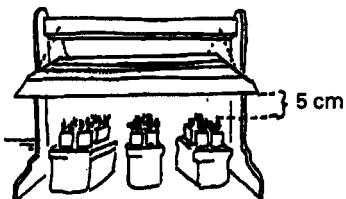
Slow Growth

- Lower temperature in school than normal on nights, weekends, and holidays
- Fewer than 6 cool-white fluorescent bulbs in light bank
- Plants growing at lower temperature due to location near window in winter

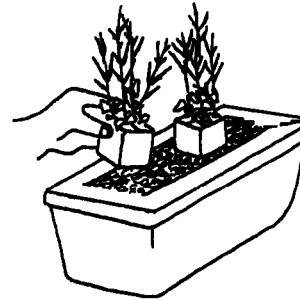


Spindly Plants

- Less than 6 cool-white fluorescent bulbs in light bank
- Aphids or other pests
- Lights too far away from plants (should be 5–10 cm from growing tip)
- Fertilizer not added to each cell (insert fertilizer pellets at corners of cell and push below potting soil surface)
- Too much fertilizer added to each cell



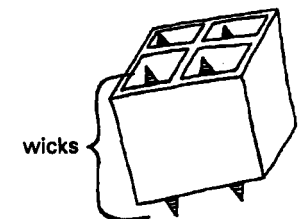
Plants Wilt



- Plants are left unwatered (over the weekend, for example). If plants are wilting (but not yet crisp), you may be able to save them. Fill reservoirs with water and float the quads in the water while adding water from above with pipets. Allow the quads to float on the water until plants are turgid again. Re-soak the water mat and return the quads to the mat.
- Wicks are not in contact with the water mat.

Plants Die

- Wicks not placed correctly in bottom of quads
- Water mat not touching water (may be stuck to bottom of platform)
- Water mat not wet thoroughly and/or all air pockets not removed when watering system was set up
- Water mat clogged and not wicking water (wash mat in 5% vinegar solution and rinse thoroughly)
- Quad not completely on water mat (check quads at end of each day)
- Water in tray ran out over weekend (always check water on Fridays!)
- Plant damaged during thinning (handle gently)
- Plant damaged during movement (as plants grow taller, stake and secure them with plastic rings)



Insects

- Lady beetles can be used as a biological pest control. (Order some from Carolina Biological Supply Company.)
- Remove the insects from your plants by hand and pinch them.
- Use an insecticidal soap.
- Consult a garden store.

