



INFRASTRUCTURE GUIDELINES

I. Start House

- A heated house uses hydronic heat system, powered by a hot water tank
- System costs \$500 without the cost of the hose
- Closed circuit heating system, operating at 20# pressure, using a small, circuit pump (A/C)
- This is a more efficient way to heat, as opposed to heating air
- The hot water hoses run on table, above a layer of bubble wrap insulation; the starts trays sit directly on the hose; water temperature is approximately 140° F
- Venting the house without mechanics is possible; fans are used during the humid spring only; otherwise, the houses vent with operable panels on roof

A. Potting soil: don't put anything in you don't need

- Because our farm is certified organic, it matters what is in it, so we make our own
- Mixture of peat moss, compost, perlite, and kelp, along with other trace minerals
- We use a water-soluble fertilizer from time to time

B. Soil temperature

- Ranges in the start house: salad: 55 – 60° F, germinating eggplant and tomato: 75 – 80° F
- During cold times, a covering of floating row cover will create a thermo bubble over the top of the plants if you need to increase temperature
- We use a soil probe which is compatible with the thermostat; we use a probe suitable for a wet location

II. Greenhouses

- 3 types of houses: 1 hoop house, 1 gutter connect, and the rest are gable roof houses
- We prefer the gable roof: (pitched roof and 6' straight sides) because there is less condensation drip on plants; this keeps excess moisture off of plants during winter months
- It is possible to produce \$8,000 - \$13,000 in winter production per house

A. House construction

- Kip will construct a house with 1 other person
- With a crew, we can sheet 2 houses in one day
- Cost of construction: approximately \$8,600
- Greenhouse plastic tightness has to do with how much sun and wind there is at the time of installation
- We would prefer to have sides that lower, but for now, sides are raised from the bottom up



SEASON CREATION

PROFESSIONAL DEVELOPMENT PROGRAM



- The benefits of an opening system by lowering would be: better wind and cold air protection for the plants, better release of the heat build up at the top of the house (heat rises)
- 6 mil. greenhouse plastic has a 4 year warranty, we have gotten 8 - 9 years out of ours
- In winter, the greenhouse sides are held down with gravel; might also be possible to use tubing, filled with water

B. House orientation

- Oriented so narrow end faces prevailing wind; the lower vent doors are on prevailing west side; upper vent doors on the east side – this provides natural self ventilation
- Capturing as much light as possible facing exposure very important in winter growing; the height of houses in valley appears to be of some significance
- With the next planned house, constructed further up the hill, we expect to get substantially more daylight per day

III. Soil

- Creating your own soil: we have used subsoil plus #9 gravel and peat moss
- We use spent mushroom blocks from our mushroom-growing operation in our compost; we feel the mycelium in the blocks makes nutrients accessible to plants

IV. Covering

- An essential part of our winter growing operation is covering the plants inside the greenhouses
- Watch the weather; be attentive about covering
- We currently use a double floating row cover, 1.25 oz/yd² as well as .90 oz/yd² cover in tandem; the lightest weight goes on first
- Could get 3 or 4 years out of a cover, however it picks up dirt over time, which means less light gets through
- We are working on a new system that keeps cover suspended and will collect less dirt
- Floating row cover outside would require heavy weights because of wind
- For covering, you can get away with using 1 year plastic inside the greenhouses; we sometimes add this as a third layer in periods of extreme cold, such as single digits
- We cover at 27^o

V. Fence

- #16 high tensile, supported by concrete in corners, approximately 8' high with 12 wires
- We use 100 mile fence on 10 mile line to provide plenty of shocking power