

# Greenhouse Profitability

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- When setting up a greenhouse:
  - Get the stakes in properly....consider hiring an expert
  - Make greenhouse higher, gives you more area to walk in, more O2 and CO2
  - Find out what lengths plastic comes with and don't make greenhouse too high
- In winter the key limitation to growing is light
  - Water droplets on inside of plastic blocks light
  - Snow build up also blocks light
- “Caterpillar” house
  - to keep temperatures cool enough for lettuce (but improving your soils is the best solution, even better than using a caterpillar style)
  - pipe sits on ground secured by rebar
  - use agrobond plastic
  - throw wind cloth over top for shading on southern side
  - no ventilation required
  - kept temperatures at 5 degrees from ambient
  - no door, just lift one end to enter
  - rope to hold it down
  - used to grow mustards (avoid flea beetles)
- Making a good greenhouse
  - good make up air is important
  - if your fans are moving too much air block them off half way to decrease their efficiency
  - fresh air keeps humidity down and ensures enough CO2
  - air circulation is important to a healthy greenhouse
  - having lights in greenhouse and also help add extra light
  - as you lower the temperature, your yield goes down
    - ie -5°C = 2 harvests per winter
    - 0°C = 4 harvests
    - +5°C = 6 harvests
- Circulating air from a furnace
  - Overhead Heat
    - Get 2 ft diameter polyethylene tube
    - Put your own holes in it
    - Put smaller holes close to furnace and larger holes farther from furnace
    - Gets all air flowing in the same way
    - Add a couple of fans at the peak of the greenhouse to push the hot air back down
    - A second furnace is a good insurance policy in case the first one fails
  - In Ground Heat
    - Open close loop
    - Pump to pump water out along the outside of the greenhouse under each bed
    - Pipe 22” below surface gives a cone of 4ft of heat at surface
    - 2°C above ambient is sufficient
    - 1inch PVC pipe is good enough (like what you'd use in your home for water )
      - Best to get one piece because the joints can cause leakage problems
    - Open holding tank for water to return to
- Min Max units are useful
  - To monitor temperature and humidity
  - To be alerted to any poorly or non functioning equipment (eg furnace)

- Humidity in low eighties is great
- Tensiometer
  - Measures water pressure in soil
  - Useful when you're getting started
  - Soil often isn't as dry as it appears (especially true in winter)
- If you're running your greenhouse below freezing then using the latent heat of water is a good system (ie having bottles (ie 2 l pop bottles) of water in the greenhouse)
  - Fill bottles with water
  - Hand them on the crop supports
  - They'll release latent heat at night
  - It'll work the opposite way during the day (to keep temperature down during the day)
  - Adding fans will speed up freezing or thawing
  - Will last all winter, take them down in summer (don't store in the sun or they'll begin to break down)
- A few problems
  - Algae growing on surface of soil
    - Seals off soil to air, leads to diseases
    - Solution: just break it up
    - A sign that you're watering too much
  - Carbonate build ups
    - Too much watering may cause this (when you do water water heavy and then don't water for a week, month or winter)
    - Raises Ph too high and plants can't properly absorb nutrients
    - Can be an indicator that there are too many salts in the soil
  - Mould growth
    - Well water gets too salty can cause this
    - Add acid to control salt (ie sulphuric acid titrated into irrigation)
  - Insect pests
    - Use wasps, lady bugs(in cooler greenhouses) for control
- For profitability do something unique
- Edible flowers
- Cotyledons (rapid turnover)/seedling size
- Can grow chards under table benches (good in hot summer or in shade under bench)