

Converting your High Tunnel to Hydroponic

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Two Different Commercial Hydroponic Systems

- Nutrient flow technology (NFT)
- Dutch bucket system

First step

Replace old poly sheeting

- Installed two new sheets of greenhouse poly
- Installed air blower for air pocket between the two sheets

Strip to the frame and set the grade

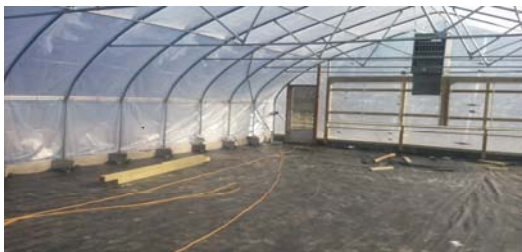
Grade should be around than 1% difference the length of the system

Tanks

- Dig out and set tanks that need the top rim at ground level
- Fill with water and cover with a lid

Weed control

- Lay down weed barrier



Cooling system

- Air flow
- Wet wall
- Fogging system
- Water chiller (NFT)
- Shade cloth
- <http://extension.uga.edu/publications/detail.html?number=B792#Loss>

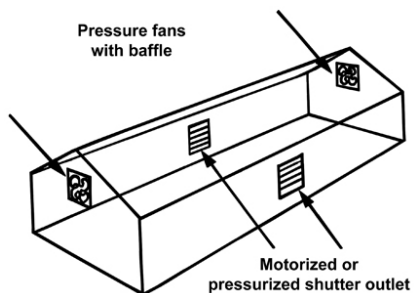
Cooling system

- Air flow/ Air exchange in cubic ft. per minute.(CFM)
- $W \times L \times 8 = \text{CFM of air exchange}$
- $30 \times 96 \times 8 = 23040 \text{ CFM}$
- Exhaust fans need to match CFM

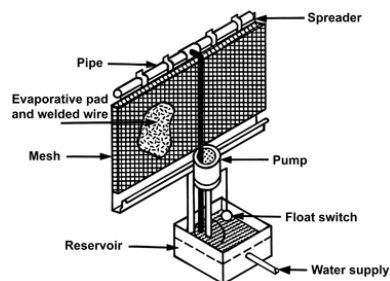
Cooling system



Cooling system



Cooling system



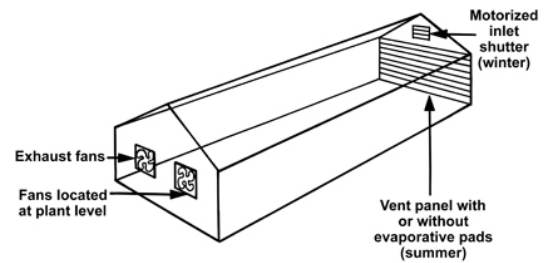
Cooling system



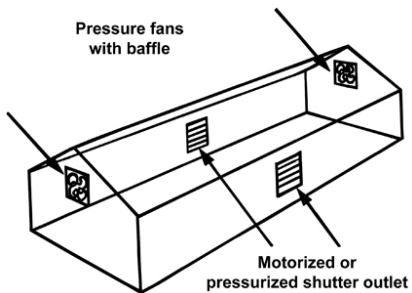
Cooling system



Cooling system



Cooling system



Heat

<http://extension.uga.edu/publications/detail.html?number=B792#Loss>



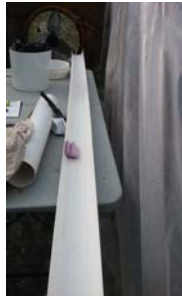
Building an NFT system



Building an NFT system

- 5 Gal bucket
- 4x4 post
- Gravel
- 2x4, 8' and 10'
- 1x2x8
- 4" 1/2 round Gutter
- 1/2" pink foam board
- 3/4" poly pipe
- 1/4" barbed connector
- 1/4" tubing & close pins
- 4" drain pipe
- Water chiller
- Solution tank
- 2, 800 gph pump
- Shower board

Building an NFT system



Front view

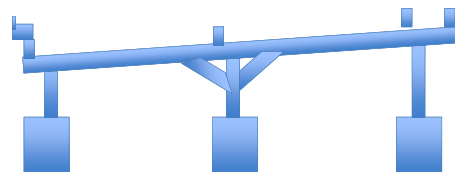
Post 8' oc



NFT



Side view



NFT



Solution tank



Water chiller



Return



NFT



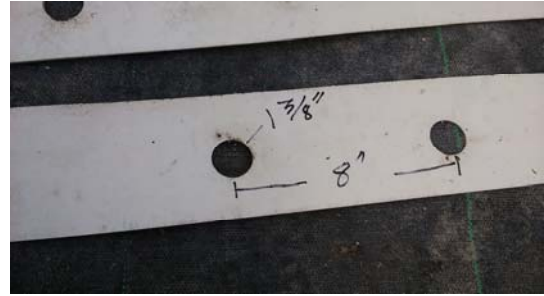
NFT



NFT



NFT



NFT



NFT



Making a Dutch bucket

- 5 Gal bucket
- 1/2" pvc pipe
- 1/2 pvc elbow
- Rubber grommet
- 1" OD 3/4" ID
- 5 Gal grow bag



Making a Dutch bucket



Making a Dutch bucket



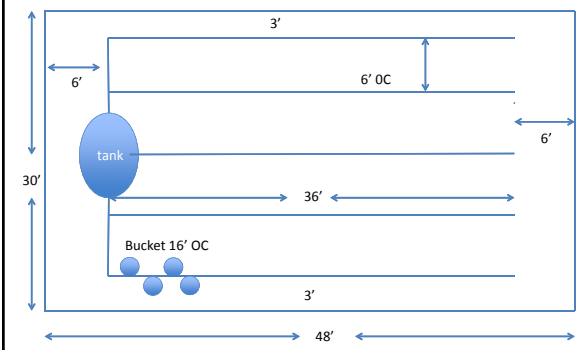
Making a Dutch bucket



Dutch bucket system

- Solution tank
- Sump pump and timer
- Acid meter
- Feed line
- 1/4" barbed connector
- 1/4" tubing
- 4" drain pipe
- gravel

Dutch bucket system



Dutch bucket system



Dutch bucket system



Dutch bucket system



Dutch bucket system



Dutch bucket system



Support wire



Are you done yet?



Must have



Nice to have



Resources

- http://www.farmtek.com/wcsstore/EngineeringServices/allbizunits/techdocs/113596_97_98_99_600_601.pdf
- extension.msstate.edu/publications/publications/greenhouse-tomato-handbook
- <http://extension.uga.edu/publications/detail.html?number=B792#Loss>