High Tunnels

Build a 12 x 50 High Tunnel

Brian Olson
Alaska Berries
12x50 High Tunnel
Site Preparation

• Ground worked and ready
• Keep your site level
• Irrigation needs
• Consider wind direction
Layout

- Layout and square your 12x48 grid
- Lay typar or landscape fabric
Baseboard Ends

- Cut the 2x6 baseboard ends at 15 degree angles
Set Baseboards

• Build and layout the baseboard frame
Square Frame

- After baseboard assembly, check the frame for square
Straight Sides

- Insure frame sides are straight
Ground Stakes

- Pound stakes every 4’
- Leave the top even with the 2x6
- Use 2” pipe nipple while pounding stake to prevent damage
Gluing Hoops

- Insure that each hoop is the same length
Inserting Hoops

- Insert the BELL end in first then bend PVC until you can grab the other end and guide it over the ground stake
• Do this for all 13 hoops remembering to keep all of the bell ends on the same side
Attaching baseboards

• Attach baseboard through PVC hoop and ground stake with a carriage bolt, flat washer and nyloc nut

• Do this all down one side only
• Measure up 42” from the ground and make a mark on each end
• Stretch string from end to end
• Mark each hoop where the string touches
• Attach hip board with 3” carriage bolts
• Align the top of the board to the mark
• Make sure that the board ends are flush with the end hoops
• Attach string to the top center of each end hoop
• Sight down the taut string to see which hoops need to be adjusted
• Raise or lower the hoops to make all the hoop tops just touch the string
• Make a mark where the string touches the top of each hoop
• This will give you the exact mark where you will now drill and attach the 1” purlins
• Remove the string
• Using a ¼” bit, drill down through the top of the hoop at the mark
• Hold the 1” PVC tight to the hoop and drill through it. Exchange the bit to the 11/32” and redrill JUST the top hole
• This will allow the square portion of the carriage bolt to rest flush on the hoop
• Continue with this same procedure to the end of the high tunnel
• Make sure to keep the purlin ends flush with the hoop ends
Attaching Hipboards

- Attach the 1x4 hip boards to the hoops as you did on the other side
Attaching channel

- Attach the 6’ galvanized spring lock channel to each hipboard
- Make sure the channel is centered on the hipboard
- Predill holes through the channel with a 1/8” bit spaced every 12”
- Use a ¾” panhead fastener
- Remove any sharp edges
• Install spring channel to both hoop ends
• Start the top piece centered at the top of the arc
• Space screws every 8” and use squeeze clamps to help form it to the arc of the hoop
• Finish installing spring channel down the sides of the end hoops
• Install a short section of channel to the inner hoop
• This will allow you to install film to the corners
End Walls

- Frame in the end walls
- Attach 6 mil visqueen to end walls using 1x2” furring strips
• Frame in a door opening on one end wall
Framing Endwall

- Use 2x4’s for end wall framing
- Use 1/4x4” carriage bolts to attach the upper end of the 2x4 to the PVC hoop
• Space 2x4 frame on 2’ centers

• Install 6 mill visqueen and use 1x2 furring strips to secure it to the frame
• Install the separate lower end covers using wiggle wire
• Caution: Wiggle wire does exactly that, it wiggles all over. Be careful; wear safety glasses
• Use heavy duty snips or bolt cutters to cut the wiggle wire
• Unroll the greenhouse film down the length of the high tunnel
• Attach one end of the greenhouse film to the end of the high tunnel using wiggle wire
• Now do the other end

• Do not overstretch the film
  --- just make it snug
• Leave 6-8” film excess on each end
• Attach one side of the film to the hipboard channel using wiggle wire
• Keep this side even while you attach it
• Finish attaching the film to the other side of high tunnel
• Have your helper keep the film snug as you go along
• Attach the roll up pipe:

• Glue 5 sections of 1’ PVC together

• Lay the 50’ of pipe next to the film; leave a foot sticking out on each end

• Attach the film to the pipe with either duct tape or film clips
**Film Hoop Clips**

Film Hoop Clips are excellent for clamping shade cloth and poly film for roll-up side walls.

<table>
<thead>
<tr>
<th>Stock #</th>
<th>Description</th>
<th>Case</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BFAFLFP03</td>
<td>Film Hoop Clip for 1 1/4&quot; Pipe</td>
<td>20</td>
<td>$6.89</td>
</tr>
<tr>
<td>BFAFLFP02</td>
<td>Film Hoop Clip for 1&quot; Pipe</td>
<td>20</td>
<td>6.72</td>
</tr>
</tbody>
</table>

Prices are subject to change without notice. Prices at time of shipment will prevail. • Available Special Order Only.

F.O.B. McConkey Warehouses
• Glue two 90 degree elbows together to create a handle
• Glue handle to one end of the roll up pipe
• Attach an eye screw to the frame
• Use a bungee cord to keep the sides up
• Insert eye screw on baseboard – every other hoop
• Attach anti-billowing webbing or rope in a criss-cross pattern
## Materials

<table>
<thead>
<tr>
<th>Material</th>
<th>Dimension</th>
<th>Quantity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typar (road fabric)</td>
<td>12’6”x50’</td>
<td>1</td>
<td>Weed Barrier</td>
</tr>
<tr>
<td>outdoor lumber</td>
<td>2x6x16</td>
<td>6</td>
<td>Baseboard sides</td>
</tr>
<tr>
<td>outdoor lumber</td>
<td>2x6x12</td>
<td>2</td>
<td>Baseboard ends</td>
</tr>
<tr>
<td>lumber</td>
<td>1x4x10</td>
<td>11</td>
<td>Hip boards</td>
</tr>
<tr>
<td>lumber</td>
<td>2x4x8</td>
<td>10</td>
<td>For framing in end walls</td>
</tr>
<tr>
<td>lumber</td>
<td>1x2x8</td>
<td>20</td>
<td>Firring lumber for end walls</td>
</tr>
<tr>
<td>lumber</td>
<td>2x6 scrap 1 foot long</td>
<td>4</td>
<td>To join the 2x6 baseboard</td>
</tr>
<tr>
<td>1 5/8 top rail</td>
<td>1 5/8 x 10’ toprail</td>
<td>10</td>
<td>Cut into 31 ½” ground stakes</td>
</tr>
<tr>
<td>PVC Elec conduit</td>
<td>1 1/2x10</td>
<td>26</td>
<td>Hoop ribs</td>
</tr>
<tr>
<td>PVC Elec conduit</td>
<td>1 x 10</td>
<td>5</td>
<td>Purlin</td>
</tr>
<tr>
<td>PVC Elec conduit</td>
<td>3/4 x 10</td>
<td>10</td>
<td>Roll up pipes</td>
</tr>
<tr>
<td>Material</td>
<td>Dimension</td>
<td>Quantity</td>
<td>Notes</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------------</td>
<td>----------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>PVC Elec conduit</td>
<td>¾” 90</td>
<td>4</td>
<td>For making roll up handles</td>
</tr>
<tr>
<td>Gal steel spring lock base</td>
<td>20 per case</td>
<td>32</td>
<td>Channel for wiggle wire</td>
</tr>
<tr>
<td>Wiggle wire</td>
<td>10 per case</td>
<td>32</td>
<td>Wiggle wire</td>
</tr>
<tr>
<td>Hoop clips</td>
<td>20 per case</td>
<td>2 cases</td>
<td>For attaching film to roll up pipe</td>
</tr>
<tr>
<td>Klerks IR/AC Greenhouse film 6 mil 4 year</td>
<td>24x100</td>
<td>1</td>
<td>Hoop house covering</td>
</tr>
<tr>
<td>visqueen</td>
<td>8x50 6 mil</td>
<td>1</td>
<td>Used for covering end walls</td>
</tr>
<tr>
<td>Carriage bolts</td>
<td>¼ x 4”</td>
<td>1 box (100)</td>
<td>Used to attach hoops/purlins/end walls</td>
</tr>
<tr>
<td>Carriage bolts</td>
<td>¼ x 3”</td>
<td>1 box (100)</td>
<td>Used to attach hoops/purlins/end walls</td>
</tr>
<tr>
<td>Nylon lock nuts</td>
<td>¼ nyloc nuts</td>
<td>2 box (200)</td>
<td>Used to attach hoops/purlins/end walls</td>
</tr>
<tr>
<td>Flat washers</td>
<td>¼” washers</td>
<td>2 box (200)</td>
<td>Used to attach hoops/purlins/end walls</td>
</tr>
<tr>
<td>Eye bolts</td>
<td>#4</td>
<td>1 pkg (25)</td>
<td>Used to secure anti billow strapping</td>
</tr>
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<tbody>
<tr>
<td>Exterior screws</td>
<td>1/2” or 5/8” or 3/4”</td>
<td>200</td>
<td>For attaching wiggle wire channel to hip boards</td>
</tr>
<tr>
<td>Exterior screws</td>
<td>3”</td>
<td>50</td>
<td>For attaching baseboards</td>
</tr>
<tr>
<td>Polypropelene rope</td>
<td>Either ½-1” x 300</td>
<td>1 roll</td>
<td>Antibillowing strapping</td>
</tr>
<tr>
<td>Or flat batten strap</td>
<td>2 ½” x 300’</td>
<td>1 roll</td>
<td>Antibillowing strapping</td>
</tr>
<tr>
<td>Bungee cords</td>
<td>12” – 18”</td>
<td>2</td>
<td>Used to hold roll up handles</td>
</tr>
<tr>
<td>PVC Door Handle</td>
<td>¾” pvc</td>
<td>2’</td>
<td>Used for door handle</td>
</tr>
<tr>
<td>PVC Door Handle</td>
<td>¾” T</td>
<td>2</td>
<td>Used for door handle</td>
</tr>
<tr>
<td>PVC Door Handle</td>
<td>¾” 90</td>
<td>2</td>
<td>Used for door handle</td>
</tr>
<tr>
<td>PVC Glue</td>
<td>gray</td>
<td>1 16 oz can</td>
<td>Used to glue PVC pipe together</td>
</tr>
<tr>
<td>PVC Glue</td>
<td>clear</td>
<td>Small can</td>
<td>Used to glue pvc handle</td>
</tr>
<tr>
<td>Eye bolts</td>
<td>#4</td>
<td>1 pkg (25)</td>
<td>Used to secure anti billow strapping</td>
</tr>
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</table>
Material List

- 12'6"x50' Typar (road fabric)
- 6ea 2x6x16 outdoor lumber
- 2 ea 2x6x12 outdoor lumber
- 10 2x4x8
- 11 ea 1x4x10
- 24 1x2x8 furring strips
- 4 pcs scrap 2x6 (each 1' long)
- 10 ea 10’ chain link toprail
  These will need to be cut into 4 pieces 31.5” long for anchor stakes
- 26 ea 1 ½” pvc elec conduit
- 5 ea 1” pvc elec conduit
- 10 ea ½” pvc elec conduit
- 4 ea ¾” pvc 90’s
- 32 gal steel spring lock base (comes 20 per case)
- 32 plastic coated steel spring wire (comes in bundles of 10)
- 2 cases (20 per case) Film hoop clips
- 24’x100’ Klerks IR/AC 6mil 4year film
- 1 box 8’6”x50” visqueen (SBS)
- 1 box (box =100 pcs) 1/4x4” carriage bolts
- 1 box 1/4x3” carriage bolts
- 1 box 1/4” nylon insert locknuts
- 1 box 1/2” flat washers
- 1 pkg (25) #4 eyebolts
- 200 ½ or ¾” exterior screws
- 50 ea 3” exterior screws
- 300’ ½ or ¾” polyrope
- Or 2 ¾”x300’ webbing
- 2 ea 12’-18” bungee cords
- PVC door handle
- 2 ¾” pvc
- 2 ¾” T’s
- 2 ¾” 90’s
- 1 16oz can of Oateys pvc cement
Tools

• 2” nipple 4” long
• 2” end cap
• Sledgehammer
• 100’ tape
• 50’ carpenter string
• 12 or 25’ tape measure
• Cordless Drill 18v
• Phillips bit inserts for driver
• 3/8” ratchet
• 7/16” deep socket
• Pliers or channel locks
• Hammer
• Sharpie marking pen
• 4’ level
• 6’ ladder
• Utility knife
• Saw horses
• Extension cords
• Power saw
• Hack saw or Metal chop saw
• Flat file
• 1/8” bit
• 1/4” bit
• 11/32” bit
• 1 1/8 forstener bit
• Bolt cutters or Metal snips
LINKS

• McConkey Co
  • http://www.mcconkeyco.com/

• FarmTec
  • http://www.farmtek.com/farm/supplies/home

• http://www.hightunnels.org/
Happy Farming!

Alaska GROWN