

Fruit Tree Shelter

Overview

The purpose of the shelter is to protect trees from experiencing temperatures below -40°C and to allow for protection of blooms from spring frost. Note that early spring management of the shelters may require venting and/or covering with a white tarp or sheet to keep them from warming up too much - ideally sheltered trees ‘wake up’ in the spring at the same time as those outside. The trees are expected to grow through the roof of the shelter at one or more points, creating fruiting branches outside. Different cultivars will respond in different ways to this opportunity – some produce better quality fruit outside than under plastic, and ripening and blooming will occur at different times inside and out, extending the available periods for pollination and harvesting.

The design is modular and 12’ sections may be added as desired by simply removing the end wall and adding more posts. The example presented is for a single 12’ shelter to house two trees (Figure 1 – footprint ~12’ x 9’) – for this size it is recommended to fix one side panel to the end walls and attach the other with hinges for accessibility and venting. With longer shelters, panels closest to the end walls may be permanently fixed. The dimensions of the end wall (sample shown in Figure 2) will depend on the exact height of the post left out of the ground (we aim for 6 ½’) and the lay of the land. *We strongly recommend building and setting panels before building the end walls!*

Materials (12’ shelter)

	<i>length</i>	<i>dimension</i>	<i>no.</i>
Panels:	12’	2x4	8
	12’	1x4	2
	8’	2x4	2
	4’	lathe	24
	3 ½”	Door Hinge	6
	Poly (UV treated) 20’ x 12’		(12 x 8, 12 x 5, 12 x 7)
Posts:	8’	4x4/5” round	3
Beam:	12’	2x4	2
End walls:	12’	1x4	11
	3”	Gate Hinge	2
	Poly (UV treated) ~ 18 x 8 (can be done from smaller pieces)		

Bracing not included

Panel Construction

Panels a & b are complementary and each pair requires 8 12’ 2x4s. Four remain full length as the top and bottom plates of each panel, with the other four being cut once such that each provides a stud for

each panel. They can either be cut at a right angle at 68”/78”, or at a 30° angle (67”/79” long sides) for aesthetic purposes. A diagonal 1x4 brace (not shown) can be added between two of the studs to prevent racking.

The roof panel consists of two 12’ 1x4 with 4’ studs with square ends. A bird’s mouth is cut into centre of the lower edge of each stud to allow for setting the roof panel on top of the centre beam. The panel will sit at about 13° from horizontal.

Cover each panel with poly and secure in place with lathe around the edges of the frame. All three pieces can be cut from a 12’ x 20’ piece.

Posts and Panel Assembly

The structural support for the shelter lies in a central row of posts. We space them at 6’ intervals, with a tree between each pair. Note that this 6’ should be reduced by half the width of your posts for the intervals at the ends of the shelters so that the end wall may be placed flush to the post and ends of panels. We use 8’ posts with ~2’ sunk into the ground, notched to receive a beam of 2 sandwiched 12’ 2x4s that are toenailed in.

Once posts are set and the beam is in place, raise the roof panel - it should balance well with the birds’ mouths set on the beam. The side panels can be lain against the roof panel such that the upper edges run $\frac{1}{4} - \frac{1}{2}$ way up the edges of the roof panel. The goal is to approach 68° from vertical - snow will not load up on this surface but will pile up as it sloughs, creating an insulative layer. Secure side panels to the roof panel with three hinges adjusting ground as necessary to level and ensure side panels are sitting square to the roof panel. Add 2x4 angle braces from the roof panel to the end posts for final securing.

End Walls

We frame our end walls with two layers of 1x4 with poly in between, measured off of the structure itself. On a 12’ shelter one door on one end is sufficient, hinged from a center piece that is attached to the end post. End walls may be fixed permanently to one panel for stability, leaving the other free to open. The mobile nature of the shelters can make latches challenging to line up consistently over time, so we suggest chain or strong cord as opposed to hardware requiring precise placement for the door. Locking hasps with a pin (as opposed to a padlock) can be used to secure the opening panel to the end walls when it is not being used.

Figure 2 – Sample End Wall dimensions to the nearest inch
(*exact dimensions will change based on height of posts*)

$W_a - 2' 10''$	$H_a - 6'$
$W_b - 3' 11''$	$H_b - 7'$
$W_c - 2' 2''$	$H_c - 5' 11''$
$W_T - 8' 10''$	$H_d - 6' 9''$
$W_r - 4' 3''$	$H_e - 11''$

