

Patti Anne's Garden News Letter



BUILD A TOMATO FRAME

How would you like to jump start your tomato (and pepper) growing season in the spring and, also, extend your growing into the fall? With a Tomato Frame you can do just that and extend your enjoyment of fresh picked vegetables by several months.

So, what's a "Tomato Frame?" you ask? It's a giant "cold frame" that is tall and large enough to grow your tomatoes in thru the summer. Now a cold frame is a simple box with a single layer of clear covering, that allows you to cover tender plants. This protects them from harsh spring winds and frosty nights while amplifying the weak spring sunshine to warm the soil and plants to give them a big boost in the spring.



A Simple Cold Frame

The cold frame is not a new invention. It dates back to the beginning of cultivated farming. Very versatile, you can build it to suit your own personal space and needs. I like to make mine in sections. That way I can add a length whenever I want, or move a section to another part of the garden.

Many times you can construct one out of recycled or reclaimed materials such as old storm windows. But, more on this topic next time. Back to the Tomato Frame! Here are some pictures of mine, with the cover rolled up and with the cover rolled down.

This first picture shows the compost, gypsum and bone meal I was digging into my garden soil. It also shows my young tomato plants, as I first planted them in my Tomato Frame in the spring.

As you can see from the picture, the frame (made from curved steel greenhouse framing, purchased from a greenhouse supply company) are attached to my 6 foot fence. There are two long raised beds inside



A Tomato Frame with the cover rolled up.



A Tomato Frame with the cover rolled down.

the frame with a graveled (for drainage) walk way down the center. The fence is lined with ½” white foam insulation, to hold the warmth in the frame while increasing the sun’s light reflected onto the plants, and there is a panel of heavy duty “sheep” fence leaned against the wooden fence, at an angle, for the Tomato (or cucumber) plants to climb on.

My Tomato Frame is 24 feet long. But you can make yours any length you want. It faces due south, so it catches the maximum light from the sun. This is very important for tomato plants in the northern climate, where I live, and where the season is already to short (if you ask me).

This second picture shows my Tomato Frame with its cover rolled down. The cover is a 4 year warranted green house film. Also purchased from a greenhouse supply company.

So what does it take to build a Tomato Frame? Let’s take a look.

INSTRUCTIONS FOR BUILDING **a 24 foot long, 9 foot wide, 8 foot tall, Tomato Frame**

TOOLS NEEDED

A good drill and steel bit(s)
Hammer
Measuring Tape
Carpenter’s Pencil
A helper or two

A metal cutting saw with blades
Shovel
A long level
Chalk Line

MATERIALS NEEDED

1) **You will need a SOUTH facing fence or wall**, that is at least 24 feet long (unless you want to make a shorter Tomato Frame) to attach your Tomato Frame too. I used a wooden fence, so my instructions focus on that. However, my fence was only 6 feet tall so I had to make all sorts of adjustments to make it fit (pain in the you-know-what). Therefore, I am writing these instructions based on using an 8 foot tall surface to build off of. If you wish to use a plastic or chain link fence, or any fence that is only 6 feet tall, then you will have to adjust these instructions to do so.

If you don’t already have a south facing fence or wall, to attach your Tomato Frame to, then build a sturdy wooden 8 feet tall fence/wall with posts 4 feet apart. Make sure all posts are anchored in concrete and are pressure treated to prevent rot. Cover the outside of the fence with cedar lumber. Place and attach a pressure treated beam inside all the posts at the top of the fence. This will make the top of the fence level and reinforced with a strong flat strong surface for attaching the Tomato Frame too.

Your fence or wall must face *due south*, in order to best capture the light from the sun. When your fence or wall is insulated, your Tomato Frame will warm faster in the morning and hold the heat longer into the evening.

Green House Supply

- 1) 7, 9 foot wide, 2" steel greenhouse rib halves. I used 2" square ribs that were intended for a 20 foot wide, 8 foot tall greenhouse. I got them from McConkey Co. in Washington State. You will need to order ribs for a 20 foot wide greenhouse in order to end up with a 9 foot wide Tomato Frame. Please be aware that the greenhouse supply people will think of a "rib" as two, 9 foot wide pieces with a 2 foot connector piece for the top middle. Therefore, when purchasing your ribs tell your supplier what you are doing with them and ask them to just send you 7 halves without the top connector piece.
- 2) 1, 50' X 15' piece of plastic Greenhouse fabric covering. Get the tear resistant, 4-6 year warranty variety. You need the extra feet to make the ends.
- 3) 7 soil anchors (that will fit up inside the bottom end of your greenhouse ribs)
- 4) 2 ground anchors (screw or pound in type) with swizzle latch
- 5) 11, 10 ft. long pieces of 1" rafter pipes:
- 6) 14, ½" galvanized or stainless steel pipe brackets
- 7) 2, 100' rolls of greenhouse pipe tape:
- 8) 6, 8 ft. pieces of single U-channel polly latch
- 9) 6, 8 ft. pieces of poly coated stainless steel spring wires (squiggle wires):
- 10) 50, 1" fabric clips:
- 11) 1, green house fabric (roll-up) Crank handle

Hardware and Lumber Supply

- 1) 14, 2 ½" rust proof bolts with washers and nuts (to bolt greenhouse rib to wall anchor)
- 2) 14, 3" rust proof screws (to attach wall anchor to fence/wall)
- 3) Rust preventative coating (to paint onto custom made wall anchors)
- 4) 7, 4' X 8' sheets of ½" thick white UV resistant foam insulation (to insulate fence/wall)
- 5) 30 large galvanized washers and ¾" deck screws (to attach foam sheets to fence/wall)
- 6) 5, 8 foot long cedar 2" X 2" s (to make trellis in Tomato Frame)
- 7) 5, 3" long deck screws (to attach 2" X 2"s to fence/wall)
- 8) 15 large galvanized fence staples (to attach sheep fence to 2" X 2"s)
- 9) 14 Stainless Steel bolts:
- 10) 28, ¾" Stainless steel metal screws
- 11) 2, 3/8" galvanized screw eyes and 5/16" drill bit. (to secure rope to fence/wall)
- 12) 50 ft. of ½" (soft) poly rope (to restrain fabric greenhouse cover against high winds)

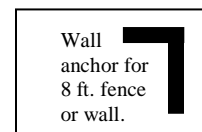
- 13) 4 14" bungee cords with ball button.
- 14) Gorilla tape (or other water proof, super sticky tape)

Animal Supply Store

- 1) 24 feet of 6 foot tall sheep fencing (to attach to 2" X 2" s to make trellis inside Tomato Frame)
I use this fencing as my trellis because it is rot and rust proof. Plus it is heavy duty enough that it will not bend and warp under the weight of the fruit laden plants. Thus it will last forever. Not only that, but the square holes are big enough to easily pick the tomatoes through.

Welding Shop:

- 1) 7 Custom made Wall Anchors made at a local welding shop. Have them made by welding a 1 foot steel piece, that will fit inside the top end of the greenhouse rib, on top of a 12" long piece that will be attached to the fence/wall. Before installing, paint them with a rust preventative.



NOTE: My greenhouse ribs were square and I found that to be a lot better for attaching the square anchor to the fence.

SUPPLIERS

Green House Supply: Growers Supply (a division of Farm Tek):

for free catalog call 1 800 476-9715

Web site: www.growerssupply.com

McConkey Company: Greenhouse Division: Phone: 1 800 426-8124

Web Site: www.mcconkeyco.com

Hardware Supply: Home Depot, Lowe's, etc....

Livestock Supply: Aslin Finch: Web Site: www.aslin-finch.com

CONSTRUCTION

Preparing the Fence/Wall

- 1) **Insulate your fence/wall:** Using the 7, 4' X 8' sheets of ½" thick white UV resistant foam insulation, line the inside of your fence with these. It will keep the cold out while increasing the sunlight reflected back onto your plants. If using a wall that is already insulated then I suggest you paint it with a (very) bright white mold resistant outdoor paint.
- 2) **Fasten Insulation to fence/wall:** Using the 28 large galvanized washers and ¾" deck screws fasten the foam insulation sheets into place against the fence/wall. The bigger the washers, the broader the area held and the less likely-hood of tearing out with wind. Simply slip the big washer over the screw. Then screw the screw through the foam insulation and into the fence/wall at several different places.

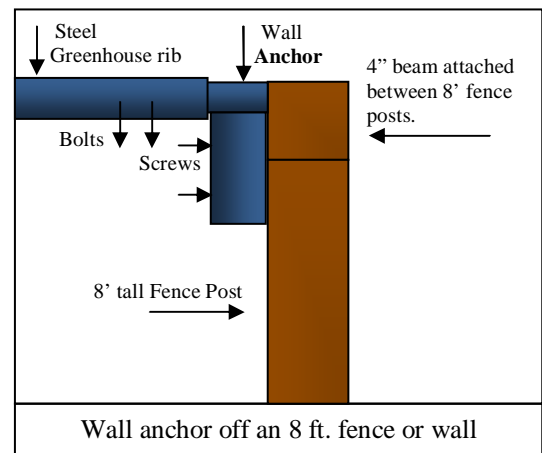
3) **Build Trellis inside Tomato Frame, Part I:** Using the 3” deck screws attach the 5, 8 foot long cedar 2” X 2”s to your fence/wall. Be sure to attach them with their bottoms out 6 inches from the bottom of the fence/wall. This angle is important in order to provide a space between the trellis and the fence in order to facilitate easy care, harvest and clean-up. These cedar 2” X 2”s will support the sheep fence trellis that your plants will grow on.

4) **Build Trellis inside Tomato Frame, Part II:** Attach the 24 feet of 6 foot tall sheep fencing to the cedar 2” X 2”s, about a foot off the ground, using the big galvanized fence staples.

5) **Install the 7 Wall Anchors, I:** Measure and mark, on your fence/wall, your Tomato Frame’s foundational corner. Mark it at 8 feet above the ground. Use your level (or a plumb bob) to make sure your vertical measuring is straight up from the ground.

Now measure and mark the horizontal length of your frame (24 feet). Using the chalk line and your level, mark a straight and level line between the two ends.

Finally mark for the remaining 5 wall anchors, every 4 feet, in-between the two ends.



6) **Install the 7 Wall Anchors II:** With a strong steel drill bit, drill two holes thru the lower part of your wall anchors and into post or beam in your fence/wall. Attach the wall anchors to the fence/wall, where you have marked for them to be, with the 3” long rust proof screws.

7) **Install the 7 Soil anchors:** 9 feet out from your fence/wall, put these into the ground, according to your manufacturer’s instructions. Place one at each end of your Frame, and one every 4 feet, being sure to line them up with the wall anchors you have already attached to your fence. I found it very advantages, at this point, to pick up and place a greenhouse rib, where I wanted it to eventually be, to make sure of my alignment between the wall and ground anchors.

8) **Mount Green House Ribs:** With a helper, place a greenhouse rib into place and slip ends over both the wall and ground anchors. Drill two holes, at each end of each greenhouse rib, thru the *sides* of each rib, and thru the wall and anchor extensions. Shove a stainless steel bolt thru each hole, place a washer over each bolt end and tighten a nut into place over each.

9) **Attach 1” Rafter Pipes:** These are used to strengthen the structure by tying the 7 ribs together, in 2 places. Join the pipes together to make two 28 foot long pipes. Trim to fit with metal cutting saw. Fasten these to, 28 foot long pipes to the undersides of all the ribs using the stainless steel brackets and screws.

10) **Tape ALL the Pipes:** This is very important! Without taping the pipes will discolor your plastic film green house covering and make it look ugly, shorten it’s life and decrease the amount of light that can get thru to your plants. Using the 2, 100’ rolls of greenhouse pipe tape, just roll out the tape and stick it to the outside of all the pipes, wherever they will come into contact with the plastic.

11) **Attach Eye Screws and Rope:** 8 feet in from each end of your Tomato Frame, attach an eye screw to the fence/wall. Cut your soft rope into two pieces of 25 feet each and securely tie each of them to one of the eye screws. These will be very useful for preserving your fabric when the wind blow.

Attach the Plastic Green House Covering

- 1) **Attach the U-Channel Poly Latch:** For fastening the fabric to the Frame. Fasten 3 of the 8 foot long U-channels, with stainless steel metal screws, all along the top of the fence/wall at the top of the Frame. Be sure to attach it slightly higher (if possible) than the frame to allow for better water drainage.
Next, fasten 1 ½ U-channels to the top of each of the two outer ribs of the frame.
- 2) **Attach the Greenhouse Covering:** Look to see if your covering has an “inside” or an “outside” to it. Put the plastic covering on top of your Tomato Frame (with any “inside” to the inside) and unfold it (make sure to keep the soft ropes on top of the covering). Pull the covering into position, with all the extra length of fabric hanging over the right side of the frame. Be sure to allow about 4 inches, on the left, for attachment into the U-channel.
- 3) **Fasten Fabric, with Squiggle Wire, to the Fence/Wall:** Starting at the top left of the Tomato Frame, and working toward the right, fasten the fabric into the top U-channel with the squiggle wires. Be sure to leave about 2 inches of extra fabric, sticking out above the U-channel, after the squiggle wire has been installed.
ALSO: Be sure to leave 4 inches of fabric *on the left* for fastening into the U-channel.
Now stretch the fabric out and make sure it will set smoothly over the entire frame with the 4 inches (or so) still on the left side.
- 4) **Fasten Fabric, with Squiggle Wire, to both ends of the Tomato Frame:** Starting on the left side, fasten the fabric into the U-channels with the squiggle wires. Then go to the right side and, after smoothing the fabric and pulling it “snug,” fasten it into the U-channel there with the squiggle wire.
- 5) **Trim the Fabric:** Being sure to leave about 2 inches of fabric, sticking out from the U-channel on the right, trim off the extra fabric and save it for the ends.
- 6) **Secure Fabric Front to Pipe:** Taking 3 of the 10 foot long, 1” rafter pipes. Attach these pipes together and cut off at 25 feet long. At the front bottom of your Tomato Frame, wrap the extra greenhouse fabric around this long pipe and fasten it to the pipe, all along the bottom front, with the 1” fabric clips. Use one clip about every 2 feet.
Be sure to leave a few inches, at each end of the pipe, not covered with the plastic so that you will have a place to anchor the pipe without hurting the plastic. This pipe will hold the plastic in place and enable you to roll it up as the weather warms.
- 7) **Attach the Crank handle:** Bolt the crank handle to one end of the pipe, that’s fastened to the bottom of the greenhouse fabric, where it will be the most convenient for you to get to, for rolling up the fabric as the weather warms.
- 8) **End Ground Anchors:** When the wind starts to blow, as it does everywhere, you will be very glad you have these anchors. Pound or secure them into the ground, at both ends of the fabric holding pipe, with the swizzle positioned to pin down the pipe. OR, attach a clip, to each anchor, that you can clip to each end of the fabric holding pipe.
- 9) **Mid Ground Anchors:** At the front middle of the Tomato Frame, pound or screw two anchors into the ground, at equal spacing. Secure one end of the soft rope to each of these anchors.

Making the Tomato Frame Ends

These ends will do the double duty of being your doors and vents.

1) **Shaping the Greenhouse Fabric to Fit the Ends:** Take the leftover piece of plastic greenhouse covering and cut it into two pieces that are 15' X 10' each. Secure a straight 15' edge, of the fabric, along the bottom of the Frame. Keeping an extra 2 feet of fabric on the ground (for anchoring), fold the fabric piece up and over the end opening. Make sure at least 1 foot of fabric overlaps at the fence side.

With a helper holding the fabric in place, undo the squiggle wires from the end U-channel and place the new piece of fabric into the U-channel on top of the top cover. Then redo the squiggle wire in to the U-channel, trapping both pieces into the U-channel. Trim off the excess fabric.

Repeat with other end.

2) **Framing the Ends:** Using 2, 10 foot long, 1" rater pipes, cut them each up as follows...

- a) Cutting from the *male* end, cut off a 2 ½ feet piece.
- b) Cutting from the *female* end, cut off a 5 foot piece.

Install as follows:

- a) At each end of the Frame, pound the two, 2 ½' pieces into the ground, right next to the fence. Pound them down, with their "*male*" ends up, until only about 6" is left above the ground.
- b) Take the two 5' pipe pieces, with the "*female*" ends facing down, and attach them to the fabric at the fence sides with 5 fabric clips each. You can trim the fabric to fit, but leave some to wrap around the pipe to make it more secure. Plus, an extra flap of fabric will help to seal the opening and allows for later adjustment.
- c) Because your end openings will need flexibility, I do not know if you will want to put a long pipe at the bottom of it but I just attached the scrap pipes as weights. These bottom pipes will weigh down the fabric, but if you get high winds you may want to add ground anchors at both ends.

3) **Securing the Rolled up Ends:** It is easy enough to roll up these ends, but the question is, "How do I secure them". I like things simple so I...

- a) Figured out and marked two places, at each end, where I wanted to fasten my fabric doors to the end ribs of the Frame.
- b) Firmly *sandwiched the greenhouse fabric* (right next to the rib) between two small pieces of gorilla tape.
- c) Cut a tiny hole thru the tape and the fabric
- d) Pushed the small end of a bungee cord thru each of the holes
- e) Rolled the ends up and secured them with the bungee cords.

God Bless and Happy Gardening

Patti Kahl