



## Steps to Building a Polyhouse Year-Round Garden

1. Map out area for Polyhouse and dig trenches three feet apart and 16" deep. Place 1" PVC piping in the trenches creating a closed grid to pump water through to keep the ground warm. (Pick one or more pictures marked # 1.)
2. Install insulation panels two feet deep around the perimeter of the Polyhouse to keep frost out in the winter. (Pick one or more pictures marked #2.)
3. Assemble framing for Quonset-style Polyhouse. (Pick one or more pictures marked #3.)
4. Enclose framing in two layers of four-mil plastic and put opaque fiber barrier on the ground with trenches cut out for plants. (Pick one or more pictures marked #4.)
5. Install water pump to move water from its source to solar panels for heating and then to grid of piping to heat the ground. (Use picture marked #5.)
6. Build and install solar panel unit to heat the water by sunlight. This unit is a wooden frame with a series of half inch piping coated in solar absorbing material for the water to flow through. It is mounted on the south wall of the Polyhouse where it will be accessible to the maximum amount of solar power. (Use picture marked #6.)
7. Seeds can either be started directly in the ground (Use picture marked #7) or in pots starting at one or two inch (Polyhouse April 2011 108) and moved to progressively bigger pots until they are ready to be planted in the ground.
8. Circulating the air to maintain a consistent temperature throughout the Polyhouse is important. Air is moved by simple house fans and plastic ducts in the ceiling. (Polyhouse April 2011 024.)
9. Monitoring ground and air temperature is crucial in the Year-Round Garden. The soil can be checked with a gage similar to this one (Polyhouse April 2011 074 and 078). Air temperature can be monitored with a standard room thermometer (Polyhouse April 2011 026.)
10. If air temperature exceeds 80 degrees it must be reduced. An exhaust fan has been installed to release excessive hot air. (Polyhouse April 2011 119.)
11. Sometimes there is not enough sun in northwest Ohio to sufficiently heat the water using the solar panels. A hot water tank has been installed as a back up in those situations. The water can be diverted to the hot water tank when it is necessary and then pumped through the piping to heat the ground. (Polyhouse April 2011 120.)
12. Documenting every step in the growing process is important to understand what works. Air and ground temperatures must be collected in multiple locations in the Polyhouse numerous times each day. To completely understand the year-round garden technology, it is also important to collect outside temperature and the amount to sunlight generated each day. (Use Polyhouse April 2011 088.)

13. Pollinating tomato plants is naturally done by bees, but if you have an aversion to those buzzing little critters, you can manually pollinate your tomatoes with an artist's brush. (Polyhouse April 2011 063.)

14. In addition to monitoring the conditions in your Polyhouse, your vegetables will need steady and regular care to make sure you get your maximum harvest. (Polyhouse April 2011 051.)

15. Crops can be raised in a Polyhouse either in the ground or in free standing pots. (Polyhouse April 2011 053)

16. The final results are red and juicy tomatoes like these. (Polyhouse April 2011 117.)