


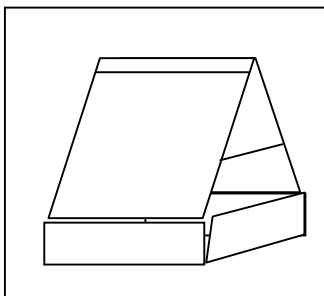
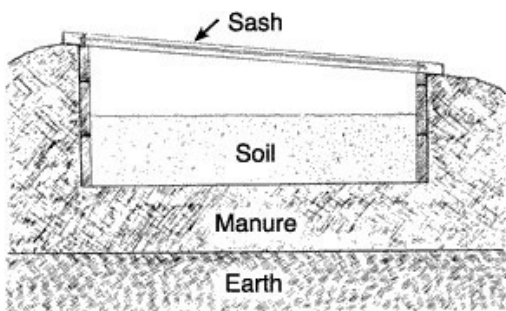
	<p><u>Solar heating</u>          Stacked Black barrels          Black Brick          Solar absorber and buried barrels  <u>Solar cooling</u>          PV fans          Bi-metal vents or foundation vents  <u>Passive cooling</u>          Shade cloth          Chimney Vent  <u>Rainwater collection</u>          Storage barrel inside          Underground  <u>Plant lights – PV</u>  <u>Irrigation</u>          Sprinkler          Soaker          Timer</p>
3 x 1 window box good size for family herbs and food growing – seasonal year	6 x 4 window box good size for family herbs and food growing – all year	12 x 10 standalone greenhouse good size for family food growing – all year	
			
Smaller size: 10 x 8 attached greenhouse good size for family food growing – all year	20 x 10 detached greenhouse good size for family food growing – all year	25 x 20 standalone greenhouse for professional growing - all year	



**Low Impact solar green house:** Cold frame

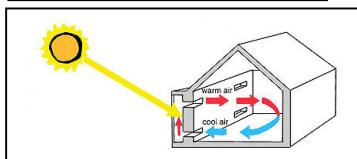
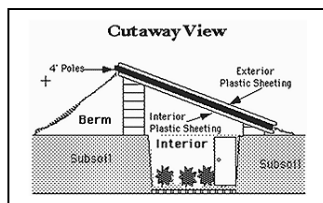
**A) low cost old windows (cast away from demolition)**

Simple A frame (side view resemble an A ) required two windows and three pieces two bys (2x4) or other leftover. Attach two windows to top board – add side pieces same length  
 Polystyrene foam boards 1" inch to 2" inch underneath slab R4 –R8 around perimeter - basement slabs  
 Concrete barrier foil equivalent to R8 – slab on slab retrofit  
 Poly Urethane expanding foam around openings  
 Anti -Crack membrane below tiles



**B) active heat loss preventions** cover (blanket) – plant bags – bubble wrap - Heat Electrical cable or other  
**C) Combination with raised bed**

**Trombe wall Design(classic)**  
 Two openings provide natural convection in combination with a larger cooler area. Green house adaptation inlet openings are diagonal. Back side towards cooler (northern wall) outlet openings are high at front (southern wall).



**The key to using a cold frame successfully** is paying attention to the temperature—and the trick is in keeping it cool rather than warm. The temperature inside the cold frame should stay below 75 degrees F for summer plants, below 60 degrees for plants that normally grow in spring and fall. The way to keep temperatures cool inside a cold frame is to lift the lid. A good rule of thumb: when outdoor temperatures are above 40 degrees, prop open the lid 6 inches; when the outdoor temps clear 50 degrees F, remove the lid. Be sure to restore the lid in late afternoon to trap the heat inside for the cool night. You can also buy automatic venting devices in some gardening catalogs.

On frigid nights, the plants inside the cold frame may need a little extra protection to keep from freezing. Most heat escapes through the glass, so pile insulation on top. You can use old blankets, straw, newspaper or whatever is handy. Snow insulates well, too, but brush heavy snow off the glass so it doesn't break.