



Loye Startzell built this portable greenhouse on an old trailer frame. If it gets too cold for the plants in his greenhouse, he just pulls it into his heated garage.



The 16 by 8-ft. greenhouse is outfitted with water and electrical hookups. Makes it easy for him to start hundreds of plants.

By Jim Ruen, Contributing Editor

## Portable Greenhouse Goes Where The Heat Is

If it gets too cold for the plants in Loye Startzell's greenhouse, he just pulls it into his heated garage. Once the sun comes out, so

does the greenhouse.

The 16 by 8-ft. unit is outfitted with all the modern conveniences, including water and electrical hook ups. It makes it easy for him to start the hundreds of plants (300 tomato plants alone) that he later transplants to his three gardens or gives away to neighbors.

"I built the greenhouse on an old trailer frame that a salvage dealer gave me," explains Startzell. "I welded the cracked frame and reinforced the cross members by adding additional bed frame rails and welded into place cross members that were bent or broken."

Once he had a solid base to work with, he laid down a 2 by 6 floor, spacing the planks so water could drain through. The 6-ft., 3-in. tall walls were framed on 16-in. centers with 2 by 2's.

To strengthen the structure, Startzell framed in the end walls with 2 by 2's and particle board with a center height of 7 ft. 5 in. He ran a 2 by 4 the length of the trailer as

a ridge beam. More particle board covers the lower 18 in. of the sidewalls, adding stability to the structure, yet allowing in light for plants set on the floor. He cut openings for two windows at either end of the greenhouse and a hole for a fan at one end and a doorway at the other end.

"I cut down an old door to the proper size and added a fold-down step made from scrap steel that I hinged to the trailer," he says. The greenhouse is covered by 6-mil plastic.

"All electrical wiring is overhead to prevent any water contact when watering plants," emphasizes Startzell, who also recommends using GFI receptacles for safety. "If it doesn't get cold enough to pull in the garage, I cover the slatted floor with pieces of carpet and plastic and hook up a small heater."

A simple garden hose holder with a faucet attached makes it easy to get water inside the trailer.

The interior of the trailer consists of two



He cut a hole for a fan at one end and a doorway at the other end.

38-in. high, 16-ft. by 29-in. shelves and a 29 1/2-in. wide center aisle.

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## Simple Solar System Chops Energy Bill

Cold water goes in, and hot water comes out. You can't get much simpler than Larry Brewer's solar water heater, and that's the way he likes it. The 24-ft., U-shaped pipe painted black and mounted to the ridge of his roof heats water and slashes his energy costs six months of the year.

"It holds about 45 gal. of water, and on a 95 degree day, the water will reach 145 degrees" says Brewer. "Even on a 60 degree day it will reach more than 100 degrees."

Installation of the system was simple. Brewer added a valve to the cold water line where it enters his hot water heater. It allows him to run cold water up and through the roof to the solar heater or bypass it and send cold water directly into the water heater. When the roof top unit is in use, a second set of valves directs the solar heated water into the water heater or bypasses it directly to the house's hot water line. A third set of valves on the system allows him to quickly drain the pipe and the solar heater when weather turns cold. Placement of the cold-water inlet at the bottom of one end of the roof top heater and the hot water exit line near the top aids in the draining process.

"I usually start using the system in March and run it until the temperatures drop to freezing," says Brewer. "I figure it works best from April through September."

Costs were minimal, consisting only of the valves, water line and black paint. The 8-in. stainless steel pipe had been scrapped at Brewer's job site and cost him nothing. A few short lengths of pipe with flat plates at one



Larry Brewer's solar water heater consists of a 24-ft., U-shaped pipe painted black and mounted to the ridge of his roof. It reduces his energy costs for six months of the year.

end serve as feet for the heater, securing it to the roofline.

Brewer considered attaching a pump to the system and creating a closed loop between the hot water heater and the roof top unit. While turning it on in the early afternoon did heat more water, the hassle wasn't worth it.

"I would have to put sensors and such on it to do it automatically, and I'm not sure it would be worth the cost," he says. "As it is, there is no extra cost and no maintenance. All I have to do is to remember to drain it in the fall."

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