

## Shade Windows in the Summer

by

James R. Ross

Robert H. Turner, PhD, P.E.

Desert Research Institute, Reno, NV



Figure 1 – Two west facing windows with bamboo blinds rolled up

On a sunny July day in Reno a 5-ft by 4-ft unshaded east or west facing window admits as much solar heat into your house as 64 100-watt light bulbs burning for an hour, or the total output of an 80,000 BTU/hr furnace running for 15 minutes. Drawing the curtains is better than leaving them open because part of the sunlight can be reflected back outside. However, the solar energy not reflected is absorbed by the curtains and converted to heat (just like in a solar collector!) and heats the house.

A much better solution is to shade the window, so the solar radiation does not reach the window. In some cases a large tree or building shades the window. But generally an external shutter or blind is necessary, which requires daily opening and closing outside the house.

Figures 1, 2 and 3 show a bamboo blind on a west window in Reno. In Figure 1 the blinds are rolled up for the night and morning. Figure 2 shows the blind being manually deployed, and Figure 3 shows the blind down, ready for the afternoon. It literally takes only a minute to conduct this twice-a-day chore. From the house interior one can see outside shapes with the blind down. Such a blind costs about \$13 from a home improvement hardware store and will pay for itself in reduced energy cost in just a few weeks; if there is no air conditioning it will pay for itself the first sunny day via a cooler house. In Autumn the shades are removed and stored for the winter, and installed in late Spring when necessary.

Figure 4 depicts an even less expensive way to provide exterior window sun block. The window shade is porous shade cloth or ground cloth, available from hardware or gardening stores, at a cost of approximately \$0.10/ft<sup>2</sup>. The porous fabric is stapled onto two pieces of 1" by 2" support wood for easy deployment and removal. The wood ends have a hook which hangs on a nail. With a single thickness of porous fabric, most of the sunlight is captured outside the window, but it is still possible to see outside. Figure 5 shows the external shade cloth affixed to a door using magnets.



Figure 2 – Takes only a minute to lower or raise the bamboo curtains



Figure 3 – Bamboo Blind rolled down



Figure 4 – Large Window Shade held up by hooks on nails

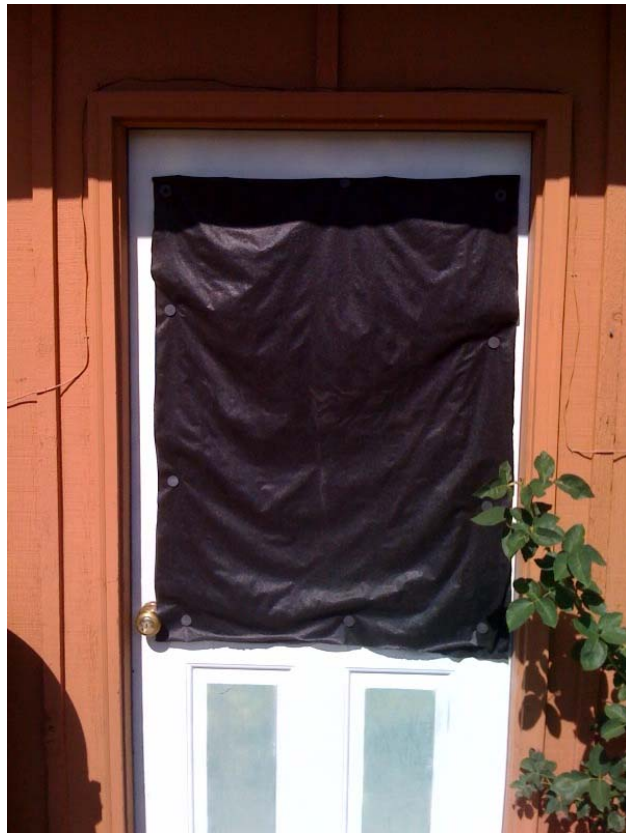


Figure 5 – External Shade Cloth affixed to door using magnets