Objective: Determine the energy use of two greenhouse insulation technologies (a bubble insulation
system and an energy/shade screen) retrofitted into plastic covered greenhouses, and compare the
conservation of these systems to a standard double-layered inflated plastic greenhouse.

What did we compare?
The three experimental greenhouses (25 ft wide, 88 ft long; 2,200 sq ft) are identical wood-frame gable
structures.
1. Unimproved standard double-layer poly inflated greenhouse (control)
2. Bubble insulation injected between two plastic layers
3. Thermal energy curtain
The R-value of a typical plastic house is around 1-2, compared to an estimated 30 for the bubble system.

What did we learn?

The bubble insulation system and
energy curtain provided significant
reductions in natural gas use and
associated heating costs compared to
the unimproved house. The bubble
insulation system was more energy
efficient than the other two, but
required more ongoing maintenance to
keep it operational.

What are the savings?
Savings in Natural Gas Use:
- Soap bubble system
 2012: 43% less gas and $946.00 lower cost than control
 2013: 33% less gas and $727.00 lower cost than control
 2014: 42% less gas and $1310.00 lower cost than control
- Thermal energy curtain
 2012: 31% less gas and $682.00 lower cost than control
 2013: 23% less gas and $593.00 lower cost than control
 2014: 25% less gas and $780.00 lower cost than control
These data are for natural gas. Propane users would see roughly four times the savings as those stated

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