

## NORTH WALL INSULATION

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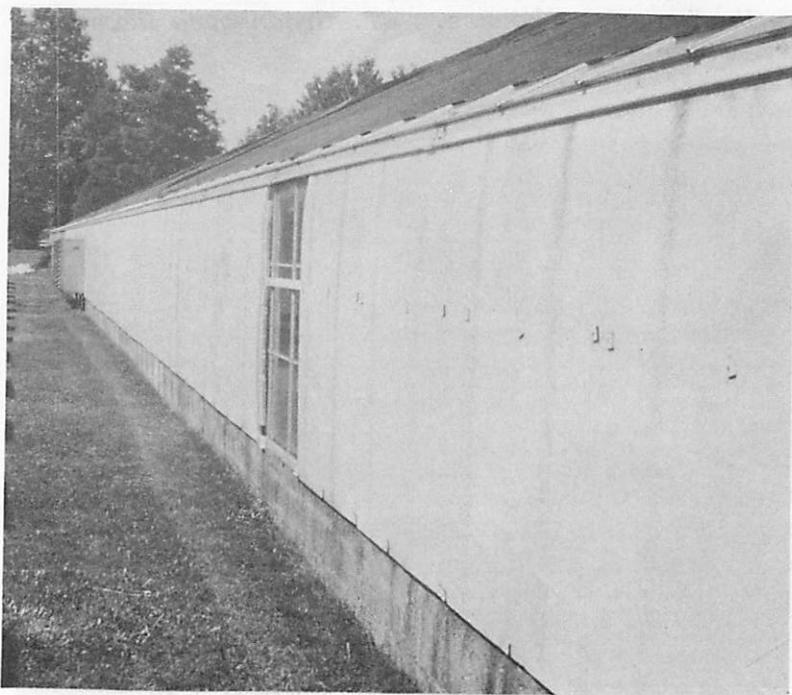
With the ever increasing escalation of fuel costs, many growers are making every possible effort to reduce the heat losses in their greenhouses. One method that may result in a 10% reduction in heating costs is to insulate the north wall of your greenhouse.

The north wall wastes both light and heat. More light passes out of the north wall than enters (Koths & Bartok, 1976). Experimentally, this has been demonstrated by covering the north wall in an east-west greenhouse to the eave with aluminum covered building paper. The resulting growth on the north bench (usually the poorest bench for growth) produced better crops than the bench next to it.

A glass side or end wall may have 10 to 15 times the heat loss of a conventional wood frame wall with 3 1/2" insulation when radiant, convection and infiltration heat losses are considered (Koths & Bartok, 1976). Several methods are available to reduce this heat loss. Some growers have resorted to removing the glass and bars; placing 2 x 4 studs in their place; insulating with 3 1/2" fiberglass; insulation covering this on the outside with texture 1-11 and on the inside with a plastic vapor seal covered with aluminum building paper (Figure 1). Another equally good method that a number of growers in Connecticut have tried is the use of foil backed styrofoam (or urethane) insulation, which can be purchased in 4 x 8 foot sheets. This material has a comparable insulative value as the previously

described wall and can conveniently be installed over existing glazing bars and glass (Figure 2). This method may also be used over existing side walls, end walls and foundations to reduce heat loss in these areas.

Various calculations have been made relating to heat loss attributed to the north wall. For example, an uninsulated glass or single glazed polyethylene greenhouse kept at 60-62°F will consume (3000 sq. ft. x 2 1/2 gals.) about 7500 gallons of oil per year. If a fully insulated north wall will save 10% of the heat, this is 750 gallons. Materials such as foil backed styrofoam may provide an extra bonus in that this reflective surface increases the amount of light available to plants.



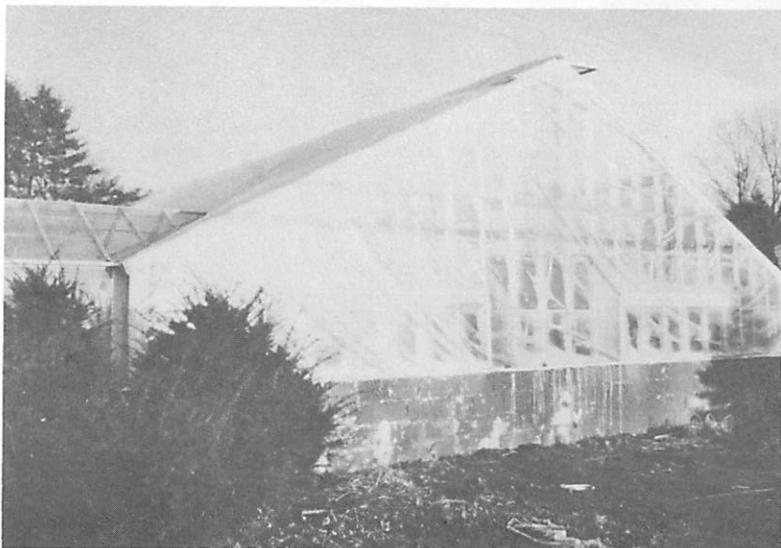
*Figure 1. This insulating board was placed on the outside; has reflective surface on inside.*

Another method that may not have the insulative value, but will certainly reduce heat loss, is to build a false insulated wall with a sheet of plastic, essentially creating a dead air space. This will certainly aid in reducing heat loss. Some growers have double bubbled the north wall to cut heat losses.

Several alternatives are available to growers to conserve energy regarding north wall insulation. In any event, new construction should be designed to provide insulated, reflective north walls, side walls and foundations. These measures will at least reduce your heating by 10%, which is worth it in these times of ever escalating oil prices.

### Literature Cited

1. *Kothes, J.S. and Bartok, J.W. 1976. Wall Up Your Greenhouses. CT. Greenhouse Newsletter 72:5-6.*



*Figure 2. If you can't wall up your north walls, at least cover them with plastic.*