

## DO YOUR PART TO CONSERVE ENERGY

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Can you get enough fuel to heat your greenhouse next winter? What will happen to your electric motors if the voltage is cut 8%? Will there be enough gas to run your trucks and equipment next spring? These are some of the questions growers are asking one another this year.

Newspaper stories and magazine articles are reporting existing fuel shortages as well as predicting long-term shortages of energy with higher prices for that which is available. What can we do in the greenhouse industry to help alleviate this shortage?

### HEAT

Providing heat in the greenhouse during the winter months consumes a large quantity of fuel oil or gas. There are many ways, though, that efficiencies can be made to reduce this consumption as well as reduce costs. The following are a few ways in which savings in heat usage can be made.

#### Reduce Air Leaks--Possible fuel saving of 3-10%

Keep doors closed--use door closer or springs. Weatherstrip doors, vents and fan openings.

Lubricate louvers frequently so that they close tightly. A partially open louver may allow several air changes per hour. Additional fuel is needed to heat this air.

Repair broken glass or holes in the plastic covering.

Close holes under the foundation of plastic houses.

Double Covering--Possible fuel saving 25-35%

Use double layer of plastic with air inflation (see Connecticut Greenhouse Newsletter No. 52).

Add a layer of plastic over glass and fiberglass houses and inflate to get double covering.

Line houses with plastic to get double covering.

Foundation and Sidewall Insulation--Possible fuel saving 3-6%

Place 1 1/4" polyurethane board with 1/8" asbestos cement board facing to 18" below the foundation to reduce heat loss. This can increase the soil temperature near the sidewall as much as 10°F during the winter.

Use 1 to 2" of insulation board on concrete walls of glass greenhouses.

Use aluminum faced building paper behind heat pipes to reduce radiation losses.

Site Location--Possible fuel saving 5-10%

Locate new greenhouses in sheltered areas to reduce wind-induced heat loss, if this does not reduce available light.

Use windbreaks on the north and northwest sides of the greenhouse area.

Efficient Heating Equipment--Possible Fuel Saving 5-20%

Have your furnaces cleaned and adjusted at least once a year.

Use thermostats with  $\pm 1^{\circ}\text{F}$  accuracy.

Clean heating pipes and other radiation surfaces often.

Use horizontal air flow (HAF) for more even heat distribution.

Insulate distribution pipes in areas where heat is not required.

Aspirate thermostats for more uniform temperature control.

## ELECTRICITY

Many uses of electricity either reduce the labor needed or increase the productivity of the present labor force. Electricity also has the advantage of being a willing and available worker at all times. Economies are achieved when the cost of electricity is less than the labor it replaces. The next section will review some of the ways that electric usage can be made more efficient.

### Wiring System--Possible saving in electricity 1-4%

Have the wiring system inspected by a competent electrician for overloading, corroded parts and faulty insulation.

Losses of electric energy to heating of the wires can be reduced by using larger wire sizes.

### Motors--Possible saving in electricity 1-5%

Motor size and type should be selected on the requirements of the equipment it is to operate.

Turn motors off when they are not needed.

Keep proper belt tension and alignment.

Use larger diameter fans with smaller motors-- example, a 36" fan with 1/3 h.p. motor will give the same output as a 30" fan with 1/2 h.p. motor with a saving in electricity cost of \$1.00 per month. Both have 7800 cfm output.

A power company voltage reduction of 8% will not affect most motors if the line supplying the motor is of adequate size and is not overloaded. A combined voltage drop due to power company reductions and line losses of more than 10% can cause motor overheating and damage. Motors with thermal overload protection should be used.

#### Lighting--Possible saving in electricity 1-10%

Keep light bulbs and fixtures clean.

Use the correct size light bulb for the job.

Turn lights off when not needed.

#### WATER

A large supply of water is needed to operate a greenhouse. The cost of this, whether it be in the form of a monthly water bill or operation charge of an individual water system, adds to the production cost of the plants. Conservation of water as well as the energy to move it can be made in several ways.

#### Pumps

Service the pump at least twice each year.

Provide adequate wire size to operate the pump to reduce heat loss from the wire and to provide sufficient voltage.

## Tanks

Use large pressure tanks to eliminate frequent starting of the pump.

Drain tanks when needed to avoid a "waterlogged" condition.

Hot water tanks should be located as close as possible to the most frequent hot water use.

Heat water to the lowest temperature that is needed for the job. Most hot water heaters should be set for 140°-150°F.

## Pipes

Use pipe large enough to supply necessary water at minimum pipe friction loss.

Insulate hot water pipes to reduce heat loss.

Eliminate all water leaks. A faucet dripping at 60 drops per minute will waste 113 gallons per month. If this is hot water at 150°F, it will cost 50 cents per month to heat it.

## GASOLINE AND DIESEL FUEL

Gasoline and diesel fuel are essential to operate the delivery trucks, tractors and other engine-powered equipment used to run the greenhouse operation. Savings can be made by observing the following:

Keep motors tuned and in good repair.

Shut off engines rather than letting them idle.

Use the smallest size motor that will do the job properly.