

# Shop Talk:

## Can You Afford Not To Invest? Proven Techniques for Fighting Rising Energy Costs

BY PATRICIA DEAN, VP WADSWORTH CONTROL SYSTEMS



The USDA has published a new computer program called the Virtual Grower. It helps you calculate your energy use and costs. The program is already powerful, and enhancements are constantly being made to improve its accuracy. Best of all its available free of charge from: <http://www.ars.usda.gov/services/software/download.htm?softwareid=108>

With Virtual Grower, you can simulate different options for reducing energy consumption: replacing film, fixing leaks, or installing an energy curtain or a new environmental control. You can use the data from your Virtual Grower analysis to calculate your return on investment for curtains, controls or new film. Simply plug in the information and you can see how much money you'll save.

Here are two example case studies to show how this works: The first shows a greenhouse in Concord, NH. The second simulates a greenhouse in Allentown, PA. In each example, the greenhouse is a 60x96 gutter-connected two-bay greenhouse with double poly covering. We assumed that both greenhouses are slightly leaky. The house is in production from September 1 through June 1.

Virtual Grower estimates that the cost to heat our sample greenhouse in Concord, NH would be \$22,820 or \$3.96 per Sq Ft assuming a fuel cost of \$2.50 per gallon of oil. Allentown, PA heating costs for the same greenhouse are estimated to be \$17,811 or \$3.09 per Sq Ft.

Griffin and Wadsworth have some solutions to help reduce those greenhouse heating figures. We used the Virtual Grower to determine the payback.

Heating costs for a greenhouse that has two bays, is gutter connected, measures 96 ft x 60 ft and has a double poly covering. Used for growing September 1 to June 1.			
Set point temp 65 no night set back temp no curtain	Set point day temp 65 Set point night temp 60 no curtain	Set point temp 65 no night set back temp has energy curtain	Set point day temp 65 Set point night temp 60 has energy curtain
<b>Greenhouse in Concord, NH</b>			
Total Heating Costs: \$22,820  Heating Cost per Sq Ft: \$3.96  Maximum BTU Draw on All Heaters: 828679 BTU/hour	Total Heating Costs: \$20,030  Heating Cost per Sq Ft: \$3.48  Maximum BTU Draw on All Heaters:787419 BTU/hour  \$2,790 savings if you install an environmental control that has a night set point set at 60	Total Heating Costs: \$13,950  Heating Cost per Sq Ft: \$2.42  Maximum BTU Draw on All Heaters:787419 BTU/hour  \$8,870 savings for installing an energy curtain	Total Heating Costs: \$12,484  Heating Cost per Sq Ft \$2.17  Maximum BTU Draw on All Heaters: 787419 BTU/hour  \$10,366 savings if you add an energy curtain and an environmental control and use a night set point of 60
<b>Greenhouse in Allentown, PA</b>			
Total Heating Costs: \$17,811  Heating Cost per Sq Ft: \$3.09  Maximum BTU Draw on All Heaters: 615590 BTU/hour	Total Heating Costs: \$15,155  Heating Cost per Sq Ft: \$2.63  Maximum BTU Draw on All Heaters:613764 BTU/hour  \$2,656 savings if you install an environmental control that has a night set point set at 60	Total Heating Costs: \$10,802  Heating Cost per Sq Ft: \$1.88  Maximum BTU Draw on All Heaters:613764 BTU/hour  \$7,009 savings for installing an energy curtain	Total Heating Costs: \$9,406  Heating Cost per Sq Ft \$1.63  Maximum BTU Draw on All Heaters: 613764 BTU/hour  \$8,045 savings if you add an energy curtain and an environmental control and use a night set point of 60

### How much can a climate control reduce my energy costs?

It's tempting to lower the temperature to save money, but that can lengthen the crop cycle time. However, research has found that most crops will be ready on schedule with a lowered night temperature. Since 80% of heating occurs at night this can result in a significant savings, but how much? The Virtual Grower tells us that if our day set point is 65 and we drop it to 60 at night using a simple staged control like Wadsworth's STEP Up we will save \$2,656 in Allentown, PA and \$2,790 in Concord, NH plus improved crop quality. These controls start around \$1,000 for a complete package-they can pay for themselves in a single season.

The STEP Up is Wadsworth's newest staged control and it has many enhanced features that set it apart from the traditional Wadsworth staged controls like the STEP 50A. The STEP Up is a computerized control that knows when the sun is going to rise and set in your area, it adjusts the day and night set point start time accordingly. It also has ramp which works like a highway ramp allowing the temperature to gradually increase and decrease between the day and night set point periods. That saves you money by not artificially heating and cooling to reach day and night set temperatures. The older technology of the STEP 50A can't make gradual changes and especially in the morning can run your heaters when given time, sunlight would naturally warm the house. (Cont. on back cover)

("Can You Afford Not To Invest?" cont. from page 7)

The Virtual Grower doesn't take into account the many other benefits that we receive from using a good control but it does show us that investing in a quality environmental control makes sound business sense.

### How much can an energy curtains reduce my energy costs?

We've all heard that curtains can save 30-40% on energy consumption but this program actually calculates the savings factoring in things like the average outside temperature for the specified location.

We ran an analysis adding an energy curtain. The Virtual Grower assumes that the curtain is covered at night and uncovers in the morning and remains that

way for the entire day.

The heating costs drop drastically. In Allentown, PA heating costs decreased by \$7,009 and in Concord, NH costs decreased by \$8,870.

Energy curtain costs vary depending on the greenhouse size and design. For this sample greenhouse Wadsworth estimates that the system costs would be approximately \$10,500 plus installation. You can recover your entire system cost from energy savings in the first two years. Many Wadsworth systems have been in service for more than twenty years-with spiraling energy costs, they save more now than they ever did.

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