



# Why Use Virtual Grower?

Now in version 2.5, the Virtual Grower greenhouse simulation software translates your structure's data and manipulates it to help calculate costs and make choices to be more efficient.

By Erik Runkle



**V**irtual Grower is a free, easy-to-use software program that is a must-install for every grower who heats his greenhouse. It enables growers to simulate their own greenhouse and predict how changes or investments could impact the growing environment, heating costs and crop responses. The program, available at [www.virtualgrower.net](http://www.virtualgrower.net), was developed by Jonathan Frantz and his colleagues in the Application Technology Research Unit of the USDA-ARS in Toledo, Ohio. Version 2.5 was released in July 2009 and has enough improvements that it should replace previous versions.

The program is simple to install and use as a tool to assist you in making decisions. But don't take our word for it; try it yourself, if you haven't already. Once the program is downloaded and installed (it takes less than five minutes with a high-speed internet connection), you build a virtual greenhouse with the same characteristics as your existing greenhouse, or one that you hope to build. You'll enter such information as ZIP code, greenhouse dimensions and design, greenhouse construction materials, heating system characteristics, fuel type and price, heating

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The program uses your information to estimate your heating costs per month and per square foot per month. By changing one or more variables, you can predict how your costs would change.

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schedule, and presence and type of energy curtain. It only takes about 10 or 15 minutes to enter the data for a greenhouse range, and you can save the information so you don't need to re-enter it the next time you use Virtual Grower.

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The newest release of Virtual Grower has several added features, including:

- a supplemental-lighting section to help predict electrical costs
- an improved energy curtain section
- real-time heating predictions for two days based on weather forecasts
- an improved plant growth section to help predict cropping times
- additional materials and fuel types that can be added by the user

Some of the uses of Virtual Grower include predictions on:

- the effect of changing temperature setpoints on heating costs and crop times
- energy savings with the installation of, or improvements to, an energy curtain
- energy savings by purchasing a more efficient boiler or burning an alternative fuel
- energy savings by changing the glazing material
- the impact of supplemental lighting on crop scheduling

There are certainly some limitations to the program, including the assumption of "normal" temperatures during the winter. (What is "normal," and when was the last time we had a "normal" year of weather?) There are also some important assumptions in the plant growth section, including the photoperiod and starting plant size. Nevertheless, the program provides unbiased, research-based information that can be used by growers to help make decisions.

Virtual Grower will continue to be developed, including the addition of more crops in the plant growth section and predictions on water use and diseases. The program also is being translated into Spanish, will be compatible for both Windows and Macintosh computers, and will have the ability to add new locations; contact us if you want to add your location. We welcome your comments and suggestions on other ways of improving this tool to make it as useful as possible. 

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