Virtual Grower 3.0 Tutorial #10: Real-Time Heating

(0:02)   Welcome to Virtual Grower tutorials, an online series designed to help users navigate different aspects of the Virtual Grower software.

(0:12)   The simulations made by Virtual Grower use a database of typical weather values for your chosen location. However, short term weather variability such as cold fronts during the winter could present cost-savings opportunities if adjustments are made to greenhouse temperature set-points. The Real Time Heating Costs option allows a user to simulate heating costs based on the weather forecast for your location for the next three days.

(0:38)   In this tutorial, we'll predict our current and short-term projected heating costs using the simulation we have been building in other tutorials. Load your simulation by going to the File menu and choosing 'Load'. Select your .gsf file, and click 'Open'.

(0:55)   First, press the 'Output' button. Make sure you have assigned the appropriate heating, lighting, and plant properties to your selected greenhouse. Your Real Time Heating Cost simulation will not work unless this step is completed first. If you have been building your simulation by following along with our tutorial series, you will note a slight change to our original heating schedule has been made. The ending date is now October 31 instead of June 1. The Real Time function uses the current time, so if your heating schedule does not cover the time period of the next three days, it will simulate costs at zero. We are running this simulation in October, so I've changed the schedule to cover that time period.

(1:38)   If you need assistance with this page, check out the Virtual Grower 3.0 Tutorial #6: Output and Greenhouse Setup. Then proceed to the Predictions/Forecasts section of the program and choose the Real Time Heating Costs button at the top of the page.

(1:54)   You will need to enter the five digit zip code for your facility. The program will access the weather forecast at your location from the website forecast.weather.gov and compare it to greenhouse set points. For this reason, you must have an active internet connection in order for this feature to work properly. Additionally, this feature only works for the "lower 48" US states.

(2:17)   Next, choose your greenhouse from the list of your designed greenhouses provided in the large white field by checking the box next to its name. Then press the 'Calculate Costs' button. After a few seconds, the data table to the right will populate.

(2:30)   Your heating costs are broken down across the top of the table, listing your total heating cost for your greenhouse, a calculation of your heating cost per unit space, and your total BTU usage for the next three days. Your local weather information is given for each hourly interval, and includes temperature and wind speed. Lighting costs are not yet included in this simulation, as radiation values are not included in traditional weather forecasts.

(2:58) Your total real time costs are also presented in a pie graph at the bottom of the page. Different representations of the data, similar to those available on the Output Costs page, are planned as updates are made to Virtual Grower 3.0. If your heating costs are zero, then no graph will appear below.

(3:16) It is important to note that the data simulated is only as good as the weather forecast. These values are also more accurate if you have already been heating your greenhouse, since no heat storage from cement, structure, or other materials is included in these calculations.

(3:32) This completes the Real Time Heating portion of the Output menu. Additional tutorials describe other segments in the Output section.

(3:40) Any time you need more assistance, you can go to the Help menu. There, you will find our email address, USDA-ARS@utoledo.edu.