Virtual Grower 3.0 Tutorial #6: The Output Menu and Greenhouse Setup

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

(0:12) In this tutorial, we will begin the process of calculating costs for a greenhouse we have designed by assigning a heating schedule and set-up, supplemental lighting system, and plant group to that greenhouse. We'll continue the simulation we have been building throughout other tutorials. Under the File menu, select 'Load'. Choose your .gsf file and click 'Open'. Click on the 'Output' button under the Output section, located at the bottom left.

(0:43) The default display presents the Greenhouse Setup screen. The large white field lists the greenhouses you have created in the Greenhouse Design section of the Design menu. You can select the greenhouse you want to assign properties to by clicking once on the name in the list. The active greenhouse will be highlighted in blue.

(1:03) You can assign heating properties under the Heating section of the page. The dropdown menu gives you a list of the heating systems you have designed in the Heating portion of the Design menu. Selecting the Multi System Setup button activates the dropdown menu for a secondary heating system. Often, greenhouses utilize a multi-stage heating system that relies upon one, high-efficiency system that runs most of the time, and during extreme lows in temperature, a secondary, often lower-efficiency and less expensive system that contributes to a greenhouse's heating needs. Choose the BTU threshold that activates your secondary heating system. If the heating needs of your greenhouse exceed that value in a given hour, your secondary heating system will provide the rest of your heating needs up to the actual heating demand.

(1:52) Next, choose a heating schedule by checking the box next to the one you want. The box must be checked to activate that schedule. If you have created more than one schedule, keep in mind that you are able to assign multiple heating schedules to one greenhouse, as long as the schedule dates do not overlap.

(2:11) Under the Lighting and Plants section of the page, you are able to assign a lighting set-up and schedule to your greenhouse. When you choose a lighting set-up from the dropdown menu, the lighting schedule dropdown menu will activate. If no supplemental lighting is needed in your greenhouse, choose 'None' from the Lighting Set-up dropdown menu.

(2:31) The plant growth and development section is below the lighting assignment menus. The 'Season Start' dropdown menu refers to the date that your growing season begins or when the plants will actually be started in the greenhouse. This date must be on or after the start of the heating schedule selected above.

(2:49) Select the carbon dioxide level in your greenhouse. If you do not supply additional carbon dioxide to your greenhouse, set this value to a number between 350 and 400 parts per million, which is representative of ambient carbon dioxide levels.

(3:05) Now, choose the plants that will be grown in your greenhouse from the Plants List dropdown menu. The species included in your chosen list are detailed below this menu. Any changes that you might need to make to a particular plant group can be done by re-visiting the Plants section of the Design menu.

(3:22) You can repeat this entire process for all the greenhouses listed in the Greenhouse Setup field. While this may seem complex, this version of Virtual Grower streamlines your simulation by allowing you to assign a single heating or lighting system to multiple greenhouses without having to recreate each system for each greenhouse individually, or mix and match systems and greenhouses.

(3:45) This completes the Greenhouse Setup portion of the Output menu. You can save your work at any time by going to the File menu. Additional tutorials describe other segments under the Output section.

(3:58) Any time you need more assistance, you can go to the Help menu. There, you will find our email address, USDA-ARS@utoledo.edu.