

Virtual Grower 3.0 Tutorial #11: An Advanced Option- Edit Fuels and Materials

- (0:02) Welcome to Virtual Grower tutorials, an online series designed to help users navigate different aspects of the Virtual Grower software.
- (0:12) Like most industries, the greenhouse industry is subject to new ideas and changes to make it increasingly efficient and cost-effective. Flexibility for some of these changes is built into the Virtual Grower software by allowing a user to add new fuels and greenhouse materials to the existing database in the program and assign them real or theoretical efficiencies and costs for more “what if” simulations.
- (0:37) In this tutorial, we will explore the Edit Fuels and Materials option by adding a new fuel and a new material record to the database and assigning efficiency and cost properties to them. You do not need an active simulation open to use this advanced feature, and it can be visited during any point of building a simulation. For this tutorial, we’ll navigate to it from the opening page. Go to the Options menu and choose Edit Fuels and Materials.
- (1:70) The default screen brings up the Fuels Database, which already contains 30 entries. Information regarding the units of measurement, the energy output, and the estimated cost of each unit is included as well. It is important to note that Virtual Grower is designed to convert measurements between the English and metric systems, thus units for both systems are given. The columns in the database reflect the values for the measurement system that is chosen under the Options menu. The program default is the English system.
- (1:39) To add a new fuel type, press the ‘New Record’ button. Enter in the name of the new fuel by double clicking within the name text field. Highlight the default name and then type the name of your fuel. Dropdown menus are available in both the English and metric unit measurement columns. Once a unit for your fuel has been chosen in the English measurement column, the Metric column automatically updates to its equivalent, and vice versa.
- (2:05) Now enter in your fuel’s energy output and estimated cost, by double clicking in the fields, highlighting the default values, and entering in the new values. As you input these properties for your created fuel or material, you will want to make sure that your energy output values and associated costs are correct for the measurement system you are working under. For this example, we are working in the English system, so our energy output is in BTU and the cost we enter will be per ton.
- (2:37) When you are finished, press the ‘Save Record’ button. Your new fuel has been added to the bottom of the list. Once added to the list, the fuel type you have created cannot be edited. If you need to change a value for that fuel, you will need to delete it and re-create a new record with the correct value. Records can be deleted by choosing the row from the list and pressing the ‘Delete Record’ button.

- (3:01) Records originally included in the software are protected and cannot be accidentally deleted. These records are shaded in gray.
- (3:10) Changing the database type to Materials in the dropdown menu changes the database table to list the 27 materials used in the roof, sidewalls, kneewalls, and energy curtains of greenhouse structures. This screen works in a similar way as the Fuels Database page.
- (3:27) To add a new material, press the 'New Record' button. Double click in the Name field, highlight the default name, and enter in the name of your new material. Take similar steps to enter in values for the next three columns. The U-value is a material's insulative value. The closer these numbers are to zero, the better resistance they offer to heat loss. Light transmittance must be a value between zero and one, with zero indicating no transmittance of light, or a completely opaque material, and one indicating complete transmittance of light, or a completely clear material. The air exchange value indicates the ability of air to pass through your material. Materials with a value approaching or at zero have essentially no air infiltration abilities. Lastly, use the dropdown menu in the Material Type column to designate the use of your material for your roof, sidewalls, kneewalls, or energy curtain.
- (4:25) You can save your material by pressing the 'Save Record' button. If you need to delete it later on, choose your material from the record list and press the 'Delete Record' button.
- (4:36) Additions to both the Fuels and Materials databases will be saved within your program's files and will be available for use in new and existing simulations.
- (4:47) This completes the Edit Fuels and Materials option. Other tutorials describe different segments of the Virtual Grower program.
- (4:54) Any time you need more assistance, you can go to the Help menu. There, you will find our email address, USDA-ARS@utoledo.edu.