PhenologyMMS 2.0

Tools Menu - **DRAFT**

**Add Weather File** – There are three tabs on the dialog box that appear when the ‘Add Weather File’ is selected. These tabs include:

**Add Weather File** – From this tab, a weather file can be added to the database for use in creating a simulation for a new location.

1. First select the Country from the drop-down box. NOTE: Currently, only the United States is available in the Country choices. You can add a new country in the second tab described below.
2. Next, select the state for which you are adding a new weather file from the dropdown list.
3. Enter a Name for the new weather file
4. Enter the latitude of the location for which the new weather file applies.
5. Press the ‘Add Weather File’ button to add the weather file
   1. The ‘Select a Weather File’ dialog box will open and point to the current Country which as of now, the only selectin possible is ‘United States’. Double click on the country name and select the weather file listed there. If more folders are available under the country for a state or region, then double click on the appropriate choice and select the weather file by clicking on the file name and pressing the Select button.
   2. You will be returned to the Add Weather File dialog box and if the weather file is successfully added to the database, a message showing “Successful!” will appear in the empty edit box.
   3. NOTE: If you add another weather file without closing this dialog box, the “Successful!” message remains, i.e. it does not get cleared when selecting another weather file to add to the database.

**Add Country** – On this tab, you may add a new Country. There are two ways to add a Country:

1. “Do It Yourself”
   1. Enter the Name of the Country to be added in the ‘Country Name:’ text box without quotes (“”).
   2. Enter the ALPHA 3 Code for the Country in the ‘Country ALPHA 3 Code:’ text box.
   3. The Table name for your new Country in the ‘Your New Country Table Name:’ text box is automatically entered when the two entries are made above..
   4. Answer the question “Does Your Country Have Regions or States:” by checking the check box if the answer is ‘Yes’. The New Country is then saved in the Weather database. You will need to add records to your New Country and additional columns if desired.
   5. Click the ‘Add Country’ button and if it is successfully added, a message showing “Successful” will appear in the text box below the button.
2. “The Easy Way”
   1. This option is essentially the same as the “Do It Yourself” option with the exception of the ‘Country Name’ and the ‘Country ALPHA 3 Code’. The Country Name has a list of Countries already loaded in the dropdown box and you simply select the Country which you wish to add to the database. NOTE: Even though all the countries are listed in the dropdown, only the United States Country is actually in the current database.
   2. The difference in the ‘Country ALPHA 3 Code’ is that when a country is selected above then that Country’s ALPHA 3 Code automatically loads in the dropdown list. Open that list and select the code for the above Country.
   3. When these selections have been made, the table name is automatically entered in the ‘Your New Country Table Name:’ text box. This is the name that will be entered in the database.
   4. Click in the checkbox to answer ‘Yes’ to the question “Does Your Country Have Regions or States:” if true.
   5. Click the ‘Add Country’ button and if it is successfully added, a message showing “Successful” will appear in the text box below the button.

**Add Region** – On this tab you can add a Region to an existing Country. This could include States as well.

1. First select the Country Name from the ‘Country Name:’ dropdown list. Only those countries actually in the database will be displayed.
2. Enter the name for the new ‘Region’ in the ‘Region Name:’ text box.
3. Press the ‘Add Region’ button and the ‘Your New Region Table:’ name will be displayed in this text box and the message “Successful” will be displayed in the bottom text box. The database will now be updated to include this new Region for the Country you chose.

**Add Crop or Variety –** On this tab you create a new Crop or Crop Variety.

**Add Crop Type** - With this option, a new Crop Type can be added to the database. You will need to enter the input data for the new crop type.

1. In the Plant Information section, add the information for the new Crop Type
2. The Crop Type, e.g. Winter Wheat
3. The Crop Table Name, e.g. Winter Wheat Types
4. Planting Date in the form of MMDDYYYY
5. Soil Moisture – choose from one of the four descriptive soil moisture conditions: Optimum, Medium, Dry or Planted in Dust.
6. Planting Depth (cm)
7. Planting Rate
8. Maximum Canopy Height in cm
9. Base Temperature °C
10. Lower Optimum Temperature °C
11. Upper Optimum Temperature °C
12. Upper/Max Temperature °C
13. GDD Method – choose from one of four methods, generally wheat, barley, millet etc. use Method 1 and corn, dry beans, sorghum and sunflower use Method 2. Methods 3 and 4 are not yet implemented. GDD refers to the measure of thermal time which is expressed as the number of Growing Degree Days.
14. GDD/Leaf – this is also the phyllochron value. That is, the number of GDD’s required to produce one leaf.
15. In the Automate GDD section, you can choose how you to want to enter the Growth Stage Names.
    1. You can choose the ‘Do It Yourself’ option by clicking in the radio button and then entering the appropriate growth stage names in the ‘Growth Stage Names’ section below.
    2. You can choose the automated method of entering growth stage names by clicking in the radio button for the ‘Automate’ option. Five Growth Stages will be entered in the ‘Growth Stage Names’ section.
    3. If the new crop requires vernalization, click the check box next to ‘Vernalization Needed’.
16. In the ‘Emergence Data’ section, enter the values needed for each soil moisture condition. The four soil moisture conditions are: ‘Optimum’, ‘Medium’, ‘Dry’, and ‘Planted in Dust’. The four data items needed include:
    1. wfpslo – this is the lower value of the range for the ‘water filled pore space’ in percent needed for the particular soil moisture condition.
    2. wfpsup - this is the upper value of the range for the ‘water filled pore space’ in percent needed for the particular soil moisture condition.
    3. germgdd – this is the amount of GDD’s required for a soil moisture condition to allow germination to occur.
    4. ergdd – this is the amount of GDD’s required for the germinated seedling to elongate one mm.
17. When all the data are entered, and you are satisfied with the values, press the Add button at the bottom of the screen to add this new Crop Type to the Phenology Database.

**Add Crop Variety** – enter the data specific to the new variety of one of the included crops.

1. Choose the Crop for which you wish to describe a new variety.
2. In the ‘Add Crop Variety’ edit box, enter the name of the new variety.
3. Enter the Phyllochron value in the Phyllochron text box. This is used in populating the Number of Leaves section.
4. From this tab, in the ‘GDD’ section, enter the GDD’s required for each growth stage for both No Stress and Stressed conditions. NOTE: the boxes do not align well with the Growth Stage Names. Check to make sure you have entered the correct GDD’s for each growth stage.
5. The ‘Number of Leaves’ section is automatically filled based on the Phyllochron and the GDD’s entered in the ‘GDD’ section.
6. Enter the data required in the ‘Vernalization’ section. This includes:
   1. The Number of Vernalization Days - the number of days at vernalizing temperatures required by the crop variety.
   2. Base Temp – the base temperature below which no days are accumulated toward the required number of vernalizing days.
   3. Lower Optimum Temp – the average daily temperature is compared to these three temperatures (Lower Optimum, Upper Optimum and Max) and based on where the average temperature for the current day falls in relation to these temperatures, the number of Vernalization Days is increased.
   4. Upper Optimum Temp – see Lower Optimum Temp
   5. Max Temp – see Lower Optimum Temp
   6. Devernalization Temp – If the average daily temperature is higher than the Devernalization Temp, then the Number of Vernalization Days is decreased, thus prolonging the time to becoming fully vernalized.
7. Additional Data Section. These data are varied and include:
   1. The GDD Method to be used. Enter a 1 or 2. Method 1 tends to be used for plants using the C3 Carbon Fixation Pathway and Method 2 tends to be used for Crops using the C4 Carbon Fixation Pathway. Typical crops using Method 1 include wheat, barley, and millet. Crops using Method 2 include corn, sorghum, sunflower, and dry beans.
   2. P1D – this is the photoperiod sensitivity of the cultivar. It is measured in hours.
   3. P1DT – this is the optimal long photoperiod. It is measured in hours and values higher than P1DT have no additional effect on development.
   4. Canopy Height – the maximum plant canopy height the crop can be expected to achieve.

**System Settings** – On this option there is one tab named ‘Input Page’. You can set the System Settings for the Country and Region. NOT SURE WHAT THIS IS FOR OR WHAT IT DOES! WHY IS IT NEEDED?

1. From the “Default Country” dropdown, select the Country to be used to set the System Settings.
2. Then from the “Default Region” dropdown, select the Region to be used to set the System Settings.

**Delete Locations** – Use this option to delete Weather files, Countries or Regions. **Proceed with caution when using this option!** It is helpful for removing added entries to the database that you no longer need/want to be in there. Three tabs are available in this dialog box and include ‘Delete WeatherFile’, Delete Region’ and’ Delete Country’.

**Delete WeatherFile**

1. Select the Country from the dropdown listing of available Countries in the database.
2. Next, select the Region or State from t the ‘Select Weather State/Region:’ dropdown list.
3. From the “Select Weather File:’ dropdown, select the file you wish to remove.
4. When all selections are made, press the ‘Delete” button to remove the Weather File.

**Delete Region**

1. First select the Country from which you wish to delete a Region by selecting the Country from the ‘Select a Country:’ dropdown list.
2. In the next dropdown list, select the name of the Region in the selected Country you wish to delete.
3. Press the “Delete” button to remove the selected Region. If the operation succeeded you will see the “Successful” message appear. If the operation was not successful, the message will show as “FAILED”. If the operation fails, you will see a message box with an Error number and a short message.

**Delete Country**

1. From the “Select a Country” dropdown, choose the Country you wish to delete.
2. Then press the “Delete” button. If the operation succeeded you will see the “Successful” message appear. If the operation was not successful, the message will show as “FAILED”. If the operation fails, you will see a message box with an Error number and a short message.

**Delete Crop Info –** Use this selection to delete a crop variety or type. Two tabs are accessible from this option, which are “Delete Crop Variety” and “Delete Crop Type”.

**Delete Crop Variety**

* + 1. From the “Choose Crop” dropdown list, choose the crop name associated with the variety to de deleted.
    2. Then from the “Variety” dropdown, choose the Variety to be deleted.
    3. Press the “Delete” button when you are satisfied with your selection.
    4. ??? Is there a message indicating the success or failure?

**Delete Crop Type**

* + 1. From the “Choose Crop” dropdown, choose the crop you want to delete.
    2. Then press the “Delete Crop Type” button to complete the deletion.
    3. ??? Is there a message indicating the success or failure?