**How to Use the Economic Entomology Pest Model**

*Downloading the Model File:*

1. Download the Excel file, but do not automatically open it.
2. Once downloaded, find the file in your downloads folder.
3. Right-click on the file and select Properties.
4. On the General Tab, at the bottom of the window, check the “Unblock” button. Hit “Apply.” This allows the Excel file to work correctly.
5. Open the file, and if prompted with a yellow bar, click “Enable Content.”

A screenshot of a computer

Description automatically generated

If you do not see the “Unblock” button, try the following method:

1. Open your Excel application.
2. In the bottom left corner, select Options.
3. Select the Trust Center tab and then Trust Center Settings
4. Select Trusted Locations.
5. Select Add New Location, then Browse.
6. Select your Downloads folder (or wherever you want to save the Model file) and then OK.
7. Open the file and click “Enable Content” on the yellow bar if prompted.

*How to Use the Model:*

1. When you open the model, it should look something like this:

A screen shot of a graph

Description automatically generated

1. **If there aren’t any values in the drop-down list when you first open the model, click the “Clear” button until the options appear when you click the drop-down button.**

*Model Parameters*

1. Going in order, select pest type, pest-crop interaction, and temperature condition. The specified data will then be populated into the chart.
   1. If you do not see any options for the first dropdown list, click the “Clear” button.
2. The pest type you select (agronomic, horticultural, or forest), will determine your available options for pest-crop interactions. Each pest type offers a univoltine example and a multivoltine example.
3. Explore the different temperature conditions at this step to see how these conditions affect the timing of different life stages for the pest.

*Interventions*

1. In this section, you will input your values for either one or both intervention types.

*Chemical Control*

1. Select a pesticide that is effective against either adults (“Target Adults”) or immatures (“Target Immatures”).
2. Select your date of implementation in MM/DD format (for example, 04/15 for April 15). Your date of implementation decides when your intervention will occur (or begin if the chemical intervention occurs more than once).
3. Input an efficacy value between 0 and 1 to simulate varying degrees of success for your intervention. Imagine here that an efficacy value of 1 means the intervention will have the maximum possible effect. Use the “Randomize!” button to attach a random efficacy value to your intervention.
4. Select the frequency of chemical control application. For one application on the date of implementation, select “Once.” For one application followed by a second application one month later, select “Twice.” For monthly applications (maximum of 4) starting on the date of implementation, select “Monthly.”

*Biocontrol*

1. Select a biocontrol agent that is either a generalist or specialist. Refer to the table below to see how effective different types of biocontrol agents are against different pests.
2. Select your date of implementation in MM/DD format (for example, 04/15 for April 15). Your date of implementation decides when your biocontrol population is released.
3. Input an efficacy value between 0 and 1 to simulate varying degrees of success for your intervention. Use the “Randomize!” button to attach a random efficacy value to your intervention.

*Apply the intervention*

1. Whether you are running just one intervention or both, click the “Apply Intervention” button to see how these interventions will affect the pest population. You can then make changes to your intervention parameters and click “Apply Intervention” again to see how different strategies affect the population over time.

*Finding your data*

1. The associated data with your chart is on the “DataSheet” tab. You will see data with red headers (indicating hot temperature), blue headers (indicating cold temperature), and purple headers (indicating average temperature). The data under the header that matches the temperature condition you have selected on the “Model” page will be the data representing the population after the most recent intervention that has been applied by clicking the “Apply Intervention” button.
2. Once you are ready to model a different pest-crop interaction, hit the “Clear” button and start over at Step 3. Once you select a desired temperature condition, your new pest population data will appear in the chart and the “DataSheet” tab will feature the new pest’s population data.