

Introduction

The Worksheet, a form on which you enter input, is a core part of the BehavePlus fire modeling system design. When the program starts in initially opens the **BasicStart.bpw** Worksheet. You can define a different startup Worksheet that better meets your needs. It may be useful to redefine your startup Worksheet for the project you are currently working on.

Objectives

1. Develop and save worksheets with changes in modules, options, units, decimal display, and appearance options.
2. Define a worksheet as the startup worksheet.
3. Open example worksheets that come with the program.

Where This Lesson Fits In

One of the required four lessons in the Introduction Unit is devoted to Worksheets. We assume that you are familiar with that lesson and with all of the operating features covered in the Introduction lessons.

1. Basic Start – simple entry of input to get answers in the form of tables and graphs
2. Worksheets – how the worksheet is developed from user selections
3. Input methods – various ways of entering input values
4. Calculations – table and graph output options

Lesson Changes: V4.0 to V5.0

Changes to the BehavePlus program required some minor changes to this lesson. You can now see the location of the startup worksheet under Help > Installation Info. We updated the headers and footers, but did not redo many of the screen captures labeled BehavePlus 4.0.0.

Introduction

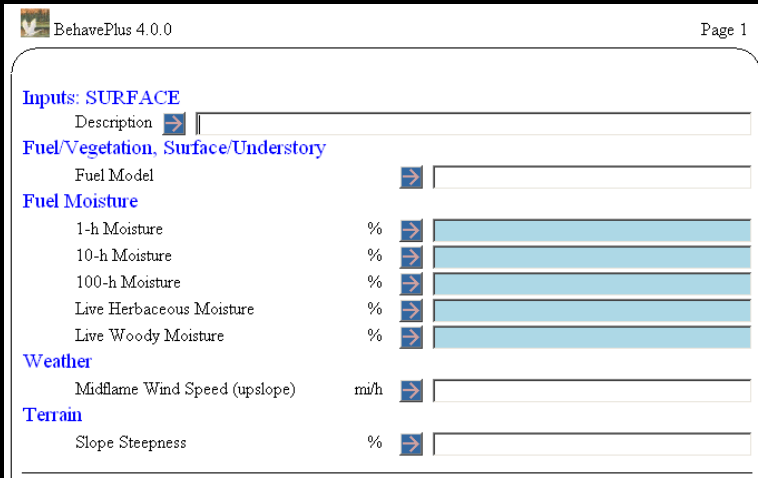
When you first start the BehavePlus program, the **BasicStart.bpw** Worksheet is loaded automatically. Several other Worksheets are packaged with the program in the folder **ExampleWorksheets**. You can also develop and save your own Worksheets.

Furthermore, you can define any Worksheet as your startup Worksheet, and you can change it at any time. You might use one startup Worksheet when you are working on a wildfire and another when you are doing prescribed fire planning.

Changing the Startup Worksheet

- Start BehavePlus.

The **BasicStart.bpw** Worksheet opens and looks like this:

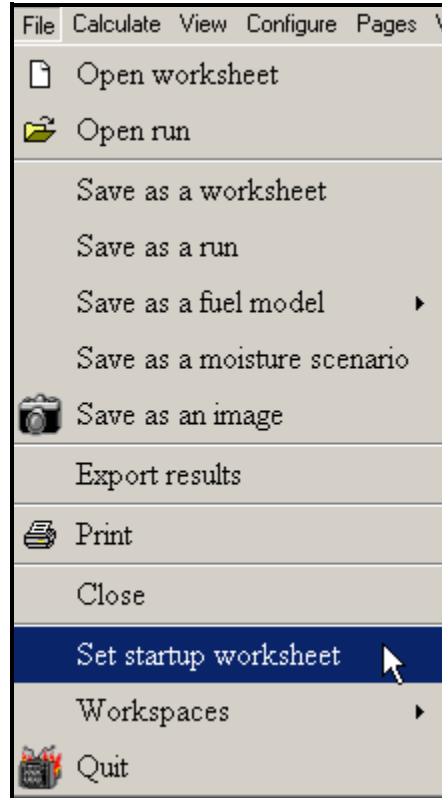


The screenshot shows the BehavePlus 4.0.0 application window. The title bar reads "BehavePlus 4.0.0" and "Page 1". The main content area is titled "Inputs: SURFACE" in blue. Below this, there are several input fields and sections:

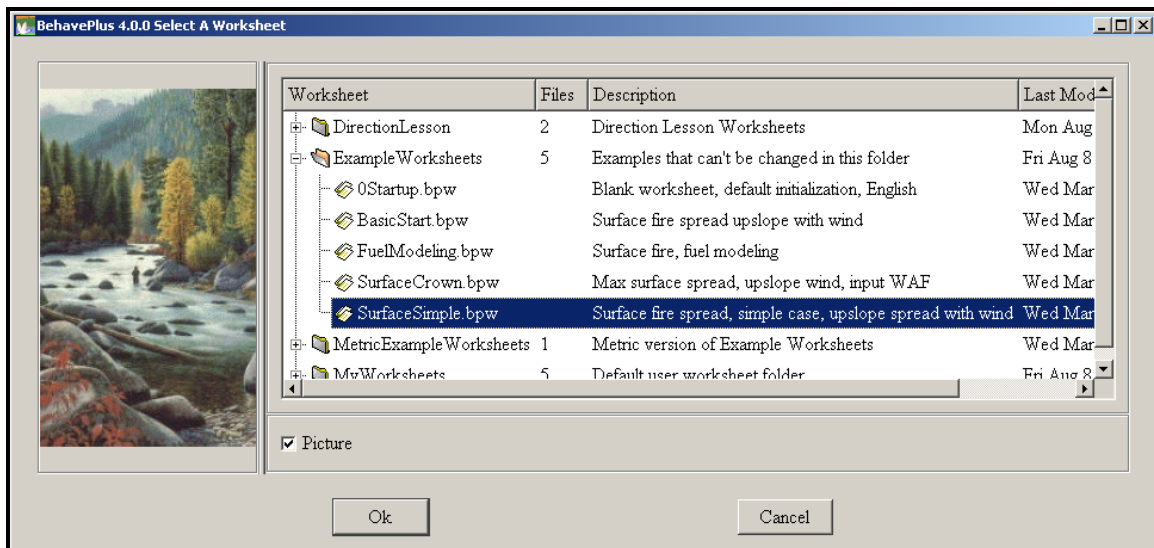
- Description**: A text field with a blue arrow icon to its right.
- Fuel/Vegetation, Surface/Understory**: A section header in blue.
- Fuel Model**: A text field with a blue arrow icon to its right.
- Fuel Moisture**: A section header in blue.
- 1-h Moisture**: A text field with a percentage sign and a blue arrow icon to its right.
- 10-h Moisture**: A text field with a percentage sign and a blue arrow icon to its right.
- 100-h Moisture**: A text field with a percentage sign and a blue arrow icon to its right.
- Live Herbaceous Moisture**: A text field with a percentage sign and a blue arrow icon to its right.
- Live Woody Moisture**: A text field with a percentage sign and a blue arrow icon to its right.
- Weather**: A section header in blue.
- Midflame Wind Speed (upslope)**: A text field with "mi/h" and a blue arrow icon to its right.
- Terrain**: A section header in blue.
- Slope Steepness**: A text field with a percentage sign and a blue arrow icon to its right.

We will change the startup Worksheet to one of the others that come with the program.

- Click on **File > Set startup worksheet**.



- Choose **SurfaceSimple.bpw** from the **ExampleWorksheet** folder.



A confirmation window notes the change.

- Click on **File > Quit** to close the program.
- Restart the program.

Now the **SurfaceSimple.bpw** Worksheet opens.

BehavePlus 4.0.0 Page 1

Inputs: SURFACE

Description →

Fuel/Vegetation, Surface/Understory

Fuel Model →

Fuel Moisture

Dead Fuel Moisture % →

Live Fuel Moisture % →

Weather

Midflame Wind Speed (upslope) mi/h →

Terrain

Slope Steepness % →

You can check on the file location of the startup worksheet.

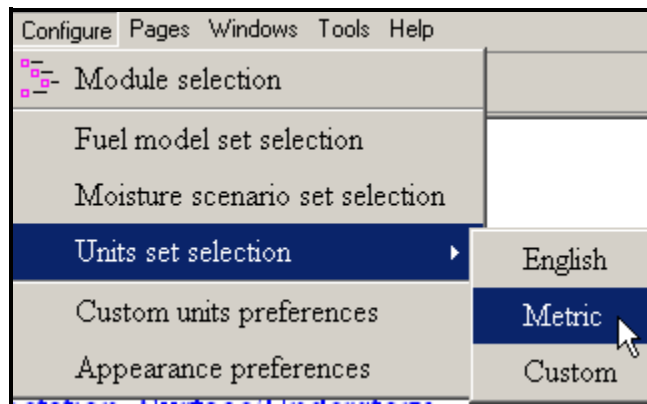
- Click on **Help > Installation Info**.

Directories	
Executable	C:\fsapps\fsprod\fam\BehavePlus5\BehavePlus5.exe
XML File	C:\fsapps\fsprod\fam\BEHAVE~4\BehavePlus5.xml
Installation	C:\fsapps\fsprod\fam\BEHAVE~4
Workspace	C:\fsapps\fsprod\fam\BEHAVE~4\DefaultDataFolder\
Startup Worksheet	C:\fsapps\fsprod\fam\BEHAVE~4\DefaultDataFolder\WorksheetFolder\Example Worksheets\BasicStart.bpw

Define a Startup Worksheet with Metric Units

We will develop a metric version of the **BasicStart** Worksheet.

- Click on **File > Open worksheet**.
- Select **BasicStart.bpw**.
- Click on **Configure > Units set selection > Metric**.



- Save as **BasicStartMetric.bpw** in a **WorksheetLesson** folder. (Alternatively save it in **MyWorksheets** if you expect to use it in the future.)
- Enter a description such as “BasicStart Worksheet with Metric Units”.
- Define this Worksheet as the startup Worksheet.
- Quit the program.
- Restart BehavePlus.

The Worksheet that opens at startup now looks like this.

 A screenshot of the BehavePlus 4.0.0 worksheet editor. The window title is 'BehavePlus 4.0.0' and 'Page 1'. The 'Inputs: SURFACE' section has a 'Description' field. The 'Fuel/Vegetation, Surface/Understory' section has a 'Fuel Model' field. The 'Fuel Moisture' section has five rows: '1-h Moisture', '10-h Moisture', '100-h Moisture', 'Live Herbaceous Moisture', and 'Live Woody Moisture', each with a '%' unit and a selection arrow. The 'Weather' section has 'Midflame Wind Speed (upslope)' with a 'km/h' unit and a selection arrow. The 'Terrain' section has 'Slope Steepness' with a '%' unit and a selection arrow.

Recall that the information stored with the Worksheet is much more than what shows on the screen. The units for every variable are metric.

- Change the module selection from SURFACE to CROWN.

<input type="checkbox"/> Surface Fire Spread (SURFACE)	Options...
<input checked="" type="checkbox"/> Crown Fire (CROWN)	Options...
<input type="checkbox"/> Safety Zone (SAFETY)	Options...
<input type="checkbox"/> Size of a Pt Source Fire (SIZE)	Options...
<input type="checkbox"/> Fire Containment (CONTAIN)	Options...
<input type="checkbox"/> Spotting Distance (SPOT)	Options...
<input type="checkbox"/> Crown Scorch (SCORCH)	Options...
<input type="checkbox"/> Tree Mortality (MORTALITY)	Options...
<input type="checkbox"/> Probability of Ignition (IGNITE)	Options...

The Worksheet looks like this... with metric units.

BehavePlus 4.0.0 Page 1

Inputs: CROWN

Description

Fuel/Vegetation, Overstory

Canopy Base Height m

Canopy Bulk Density kg/m3

Fuel Moisture

1-h Moisture %

10-h Moisture %

100-h Moisture %

Live Woody Moisture %

Foliar Moisture %

Weather

20-ft Wind Speed (upslope) km/h

Fire

Flame Length m

Run Option Notes

None

Output Variables

Critical Surface Intensity (kW/m) [CROWN]

Transition Ratio [CROWN]

Transition to Crown Fire ? [CROWN]

Crown ROS (m/min) [CROWN]

Critical Crown ROS (m/min) [CROWN]

Active Ratio [CROWN]

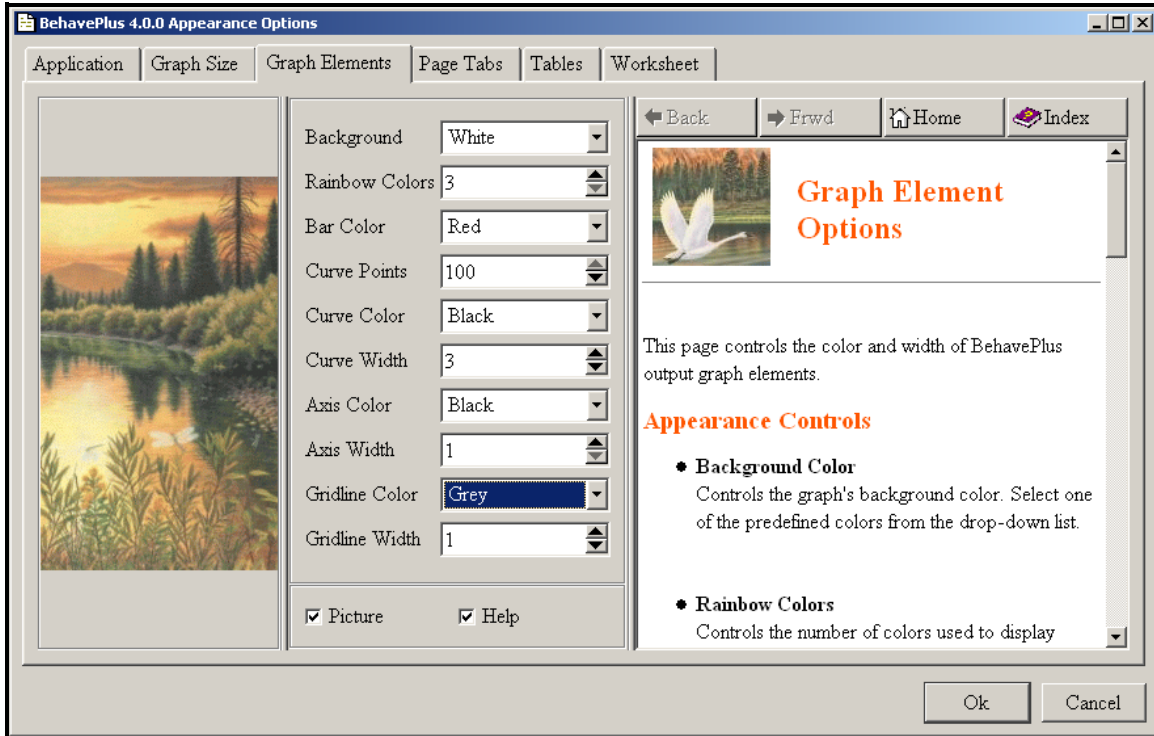
Active Crown Fire? [CROWN]

Define a Startup worksheet that produces black and white plots

A Worksheet also includes the settings that you select under **Appearance preferences**.

- Open the **BasicStart** Worksheet again.
- Click on **Configure > Appearances preferences > Graph elements**.
- Change **Curve Color** to **Black**.

- Change **Gridline Color** to **Grey**.



- Enter values on the Worksheet as follows.

BehavePlus 4.0.0 Mon, Aug 25, 2008 at 17:23:27 Page 1

Inputs: SURFACE

Description ➤

Fuel/Vegetation, Surface/Understory

Fuel Model ➤ 2

Fuel Moisture

1-h Moisture % ➤ 4 8 12

10-h Moisture % ➤ 5

100-h Moisture % ➤ 5

Live Herbaceous Moisture % ➤ 75

Live Woody Moisture % ➤

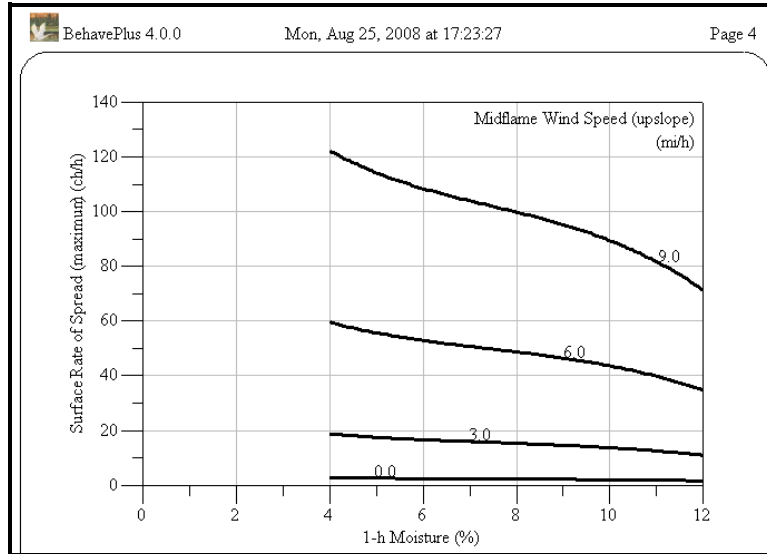
Weather

Midflame Wind Speed (upslope) mi/h ➤ 0 3 6 9

Terrain

Slope Steepness % ➤ 0

- Calculate the Run to see the following plot without color.



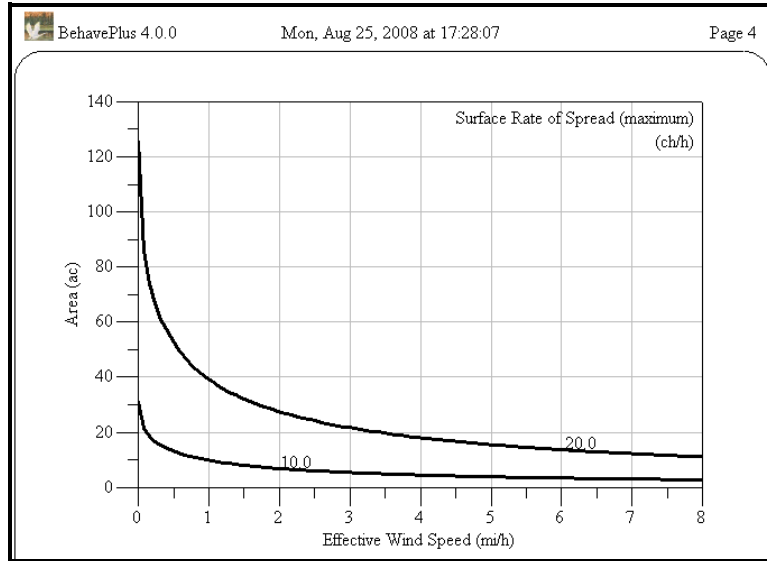
- Save the Worksheet as **BasicStartBlack** in **WorksheetLesson** (or in **MyWorksheets**)
- Enter the Description as “Graph has black curves and grey gridlines”.
- Select this new Worksheet as the startup Worksheet.
- Quit the program
- Restart BehavePlus.

This looks like the previous **BasicStart.bpw** Worksheet, but the **Appearance preferences** have been changed.

- Change the Module Selection from SURFACE to SIZE.
- Enter values on the Worksheet as follows.

Section	Parameter	Value
Inputs: SIZE	Description	
	Weather	
Weather	Effective Wind Speed	0.8 mi/h
	Fire	
Fire	Surface Rate of Spread (maximum)	10-20 ch/h
	Elapsed Time	1 h

- Calculate the Run and see the black and white plot.



Define a Startup worksheet with metric for CBD

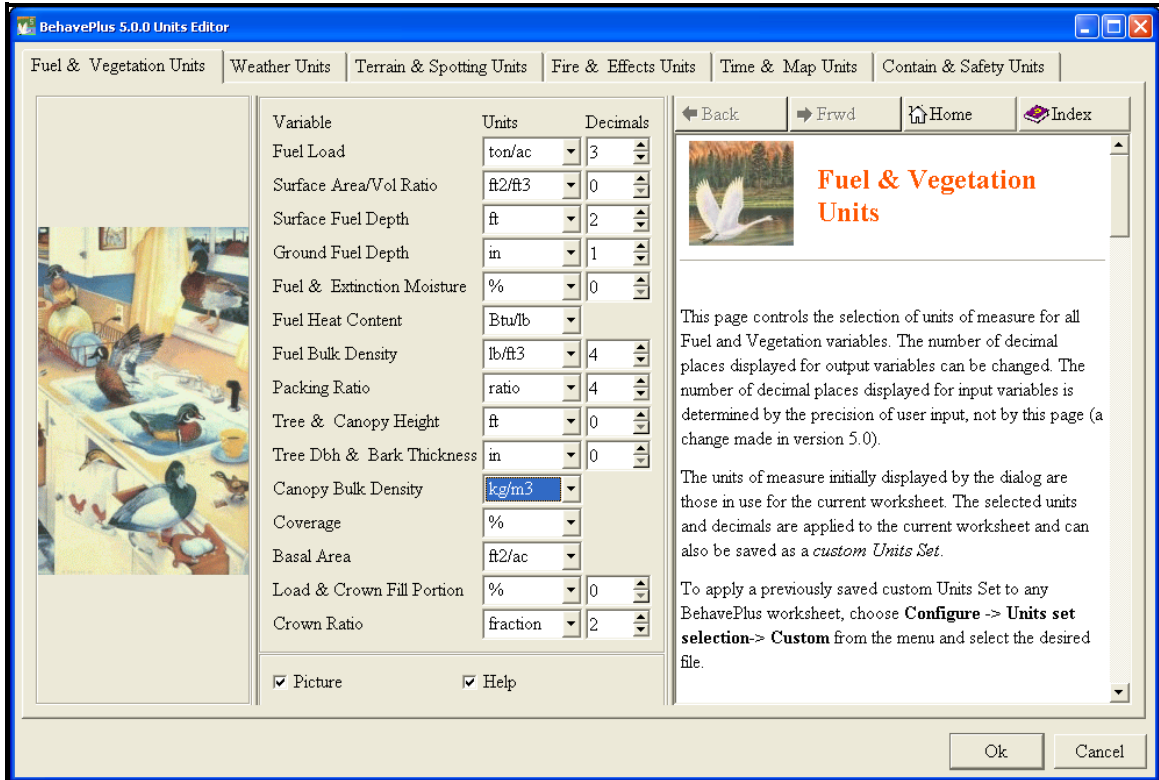
Metric units are often used for Crown Bulk Density even when the rest of the units are English. If this is your preference, you may want to develop a modified **BasicStart** Worksheet and define it as your startup Worksheet.

- Open **BasicStart.bpw** from the **ExampleWorksheets** folder.

Note: Remember that you can't change Worksheets in the **ExampleWorksheets** folder. You must save your modified Worksheet elsewhere.

- Click on the **Configure > Custom Units preferences > Fuel & Vegetation Units** tab.

- Change Canopy Bulk Density units from **lb/ft3** to **kg/m3**.



- Click **Ok** to close the **Units Editor**.
- Click **No**, because you don't have to save a Custom Units set to apply it to the open Worksheet.
- Save the modified Worksheet in **MyWorksheets** as **BasicStartCBD** with a Description that indicates that Canopy Bulk Density is in kg/m3.
- Define this as your startup Worksheet (if you wish) and leave it that way after you finish this lesson.

Summary

Several Example Worksheets come with the program. One of these, **BasicStart.bpw**, is automatically opened when the program starts. You can always open a different Worksheet once the program is opened. But for convenience, you can also define a different startup Worksheet.

Exercises

1. Assume that you want to use English units, but prefer not to use 'chains'.
 - Start with the **BasicStart.bpw** Worksheet from the **ExampleWorksheets** folder.
 - Change every use of chains to feet.
 - Save the Worksheet as **BasicStartNoChains**.
 - Define it as your startup Worksheet.
2. Define a map application Worksheet that you might use as a startup Worksheet while you are doing a fire behavior prediction job.