



# **Unit II**

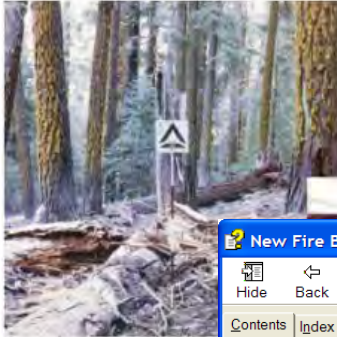
## **Fuel Model Resource Tools**



United States  
Department  
of Agriculture  
Forest Service  
Rocky Mountain  
Research Station  
General Technical  
Report RMRS-GTR-163  
June 2005

# Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model

Joe H. Scott  
Robert E. Burgan

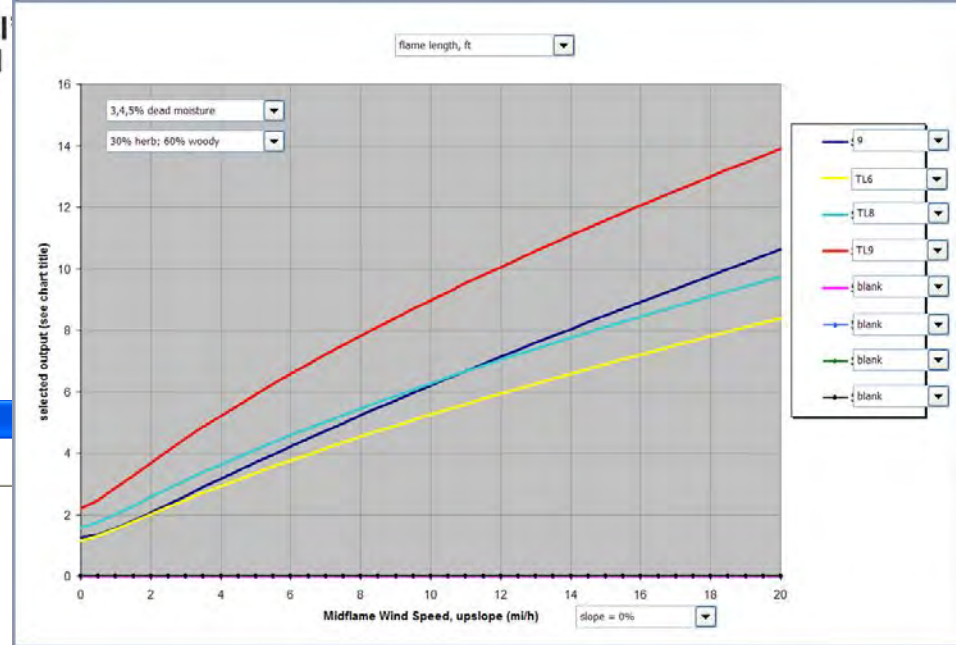
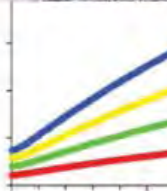


## New Fire Behavior Fuel Models

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### Abstract

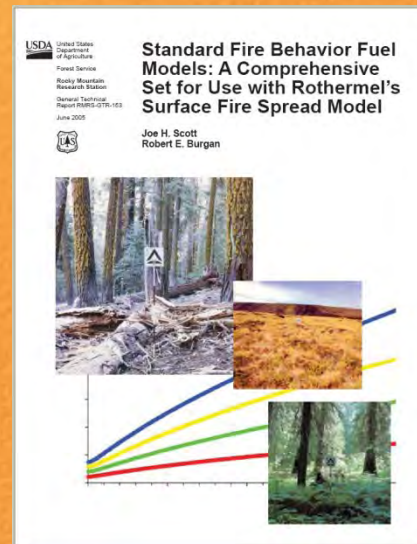
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- GTR-153

- Photos, descriptions, selection guide, crosswalk, fire behavior charts
- Electronic and printed formats
  - <http://www.frames.gov/portal/server.pt/community/fuels/218>



Subject Areas > Fuels > Home

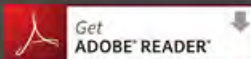
Search  Browse Records

Search the Resource Catalog:

ArcFuels

# ArcFuels

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## FUELS

**Combustible material.** (National Wildfire Coordinating Group/Fire Research And Management Exchange System)

The Fuel subject category contains resources related to the study of fuels, including, but not limited to, fuel categories, fuel properties, fuel moisture, plant flammability, fuel availability, and fuel consumption.

### New Fuel Models Released.

[RMRS-GTR-153: Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model](#)

[New Fuel Models Help File](#) (.pdf file; 8.7 MB),

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[New Fuel Models Power Point Presentation](#) (.ppt file; 2.5 MB)

[Fuel Models Spreadsheet](#) (CompareModelsFour.xls file; 114 KB)

[Combined Fuel Model Spreadsheet and Help File](#) (.zip file; 18 MB)

**About the Spreadsheet:** The spreadsheet NewFuelModelsFour.xls is provided so that you can make quick, simple comparisons of the new fuel models with each other and with the original 13 fuel models. Guidance for using the spreadsheet is included in the helpfile, described below.

**About the Help File:** The helpfile describes characteristics of the new fuel model set, its development, and its relationship to the original set of 13 fire behavior fuel models. To assist with transition to using the new fuel models, a fuel model selection guide, fuel model crosswalk, and set of fuel model photos are provided. This document also contains comprehensive fire behavior output charts to facilitate comparison of the new fuel models with the original 13. A calculation aid for comparing fuel models under a variety of environmental conditions is included.

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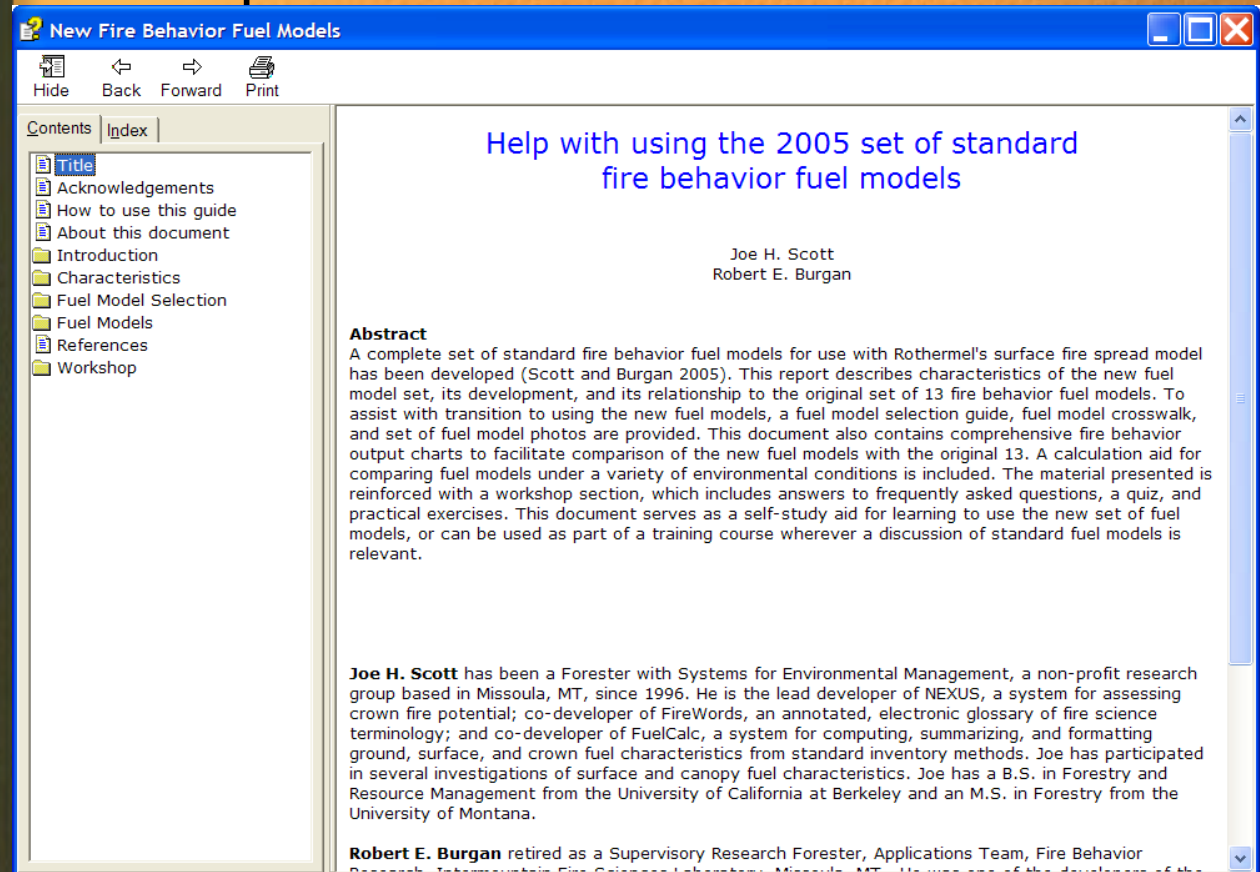
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**Related Document:** [Nomographs for estimating surface fire behavior characteristics](#)

**Related Resources:** The new fuel models relate to the following tools:

# Tools

- GTR-153
- Help file



The screenshot shows a web browser window with a blue title bar that reads "New Fire Behavior Fuel Models". The browser's address bar is empty. The main content area displays the following text:

## Help with using the 2005 set of standard fire behavior fuel models

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The browser window also features a left-hand navigation pane with a "Contents" tab and an "Index" tab. The "Contents" tab is active, showing a list of document sections: "title", "Acknowledgements", "How to use this guide", "About this document", "Introduction", "Characteristics", "Fuel Model Selection", "Fuel Models", "References", and "Workshop". The "title" section is currently selected. The browser window includes standard navigation buttons (Hide, Back, Forward, Print) and window control buttons (minimize, maximize, close).

http://www.frames.gov/portal/server.pt/  
community/fuels/218

FRAMES Home ▾ Subject Areas ▾ Geographic Areas ▾ Partner Sites ▾ Log In

# Fuels

Frames  USGS

Search  Browse Records

Search the Resource Catalog:  GO

ArcFuels

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## Fuel Model Selection

This document contains two aids to fuel model selection: a fuel model selection guide and a set of crosswalks. Use the crosswalks if you have areas already designated as one of the 13 original fuel models and you want guidance on selecting one of the new models for those areas. Use the fuel model selection guide for assistance in selecting a fuel model from knowledge of general fuelbed properties.

Both the selection guide and crosswalks offer suggestions to consider, not conclusive results. The final fuel model selection must be made by the user based on experience with fire behavior in the fuelbed under consideration.

Use the [Fuel Model Selection Guide](#)

Use the [Fuel Model Crosswalks](#)

← →



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    - TL4
    - TL5
    - TL6
    - TL7
    - TL8
    - TL9
- Slash-blowdown
- References
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## TL3 (183)

### Moderate load conifer litter



**Description:**  
The primary carrier of fire in TL3 is moderate load conifer litter, light load of coarse fuels. Spread rate is very low; flame length very low.

**Expected fire behavior.**  
[TL3 fire behavior details](#)  
[Compare TL3 with other similar fuel models](#)

Fine fuel load (t/ac)	0.50
Characteristic SAV (1/ft)	1532
Packing ratio (dimensionless)	0.02630
Extinction moisture content (percent)	20

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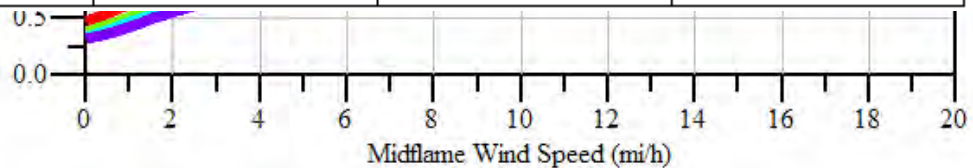
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moisture scenario	graph line color	timelag class moisture content (percent)		
		1-hr	10-hr	100-hr
D1	Red	3	4	5
D2	Green	6	7	8
D3	Cyan	9	10	11
D4	Blue	12	13	14

	L1 fully cured <b>Very low</b>	L2 two-thirds cured <b>Low</b>	L3 one-third cured <b>Moderate</b>	L4 fully green (uncured) <b>High</b>
live herbaceous	30	60	90	120
live woody	60	90	120	150



← L1 →  
← L2 →  
[Switch to spread rate](#)

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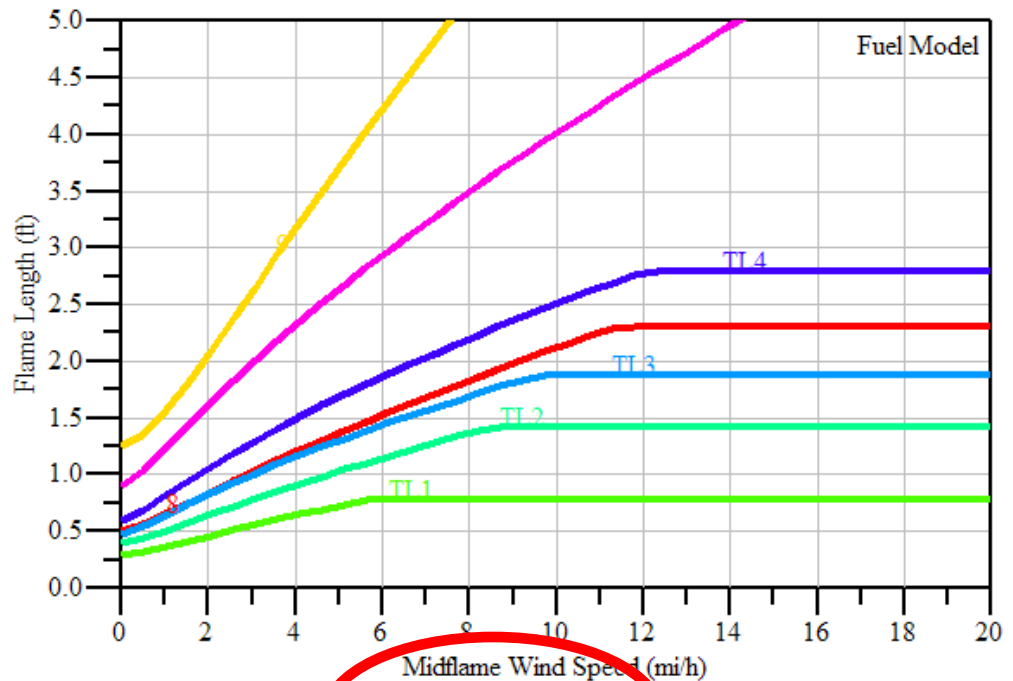
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TL1-5      TL6-9

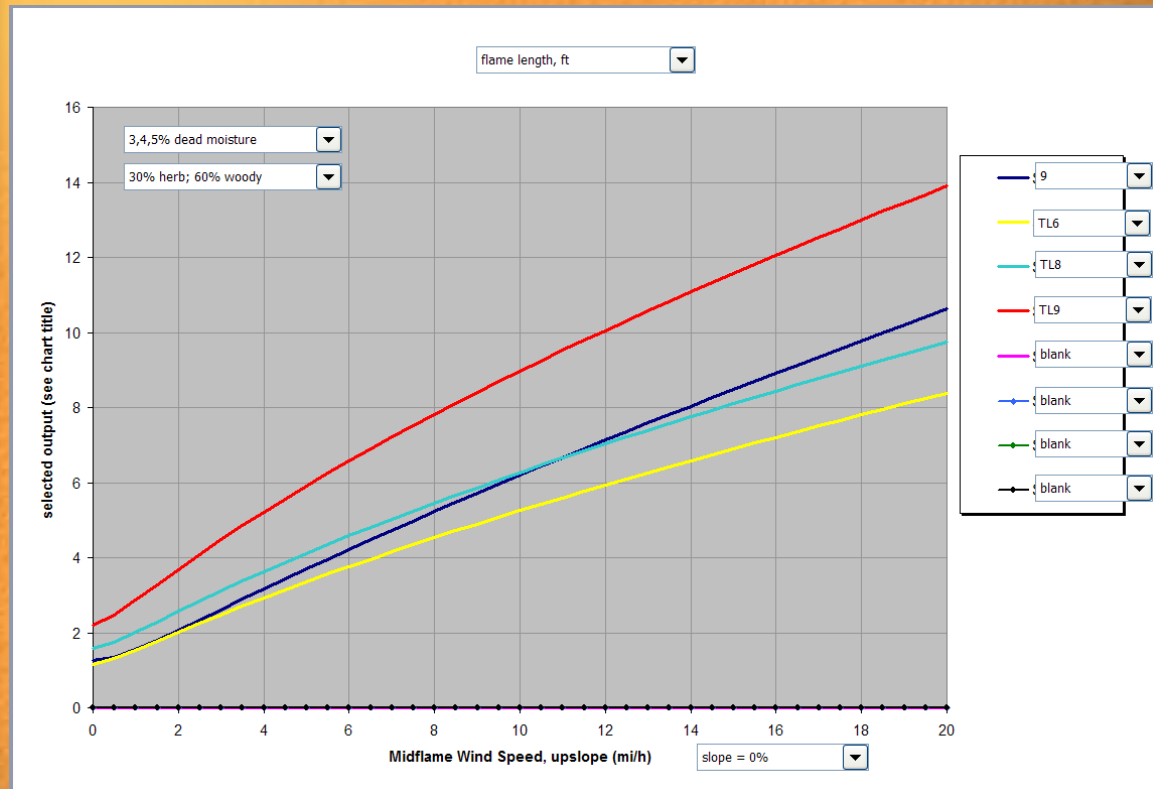
←      D1      →

[Switch to spread rate](#)

[Show legend](#)

# Documentation

- Printed GTR
- Help file
- Comparison spreadsheet



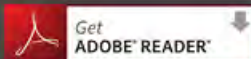
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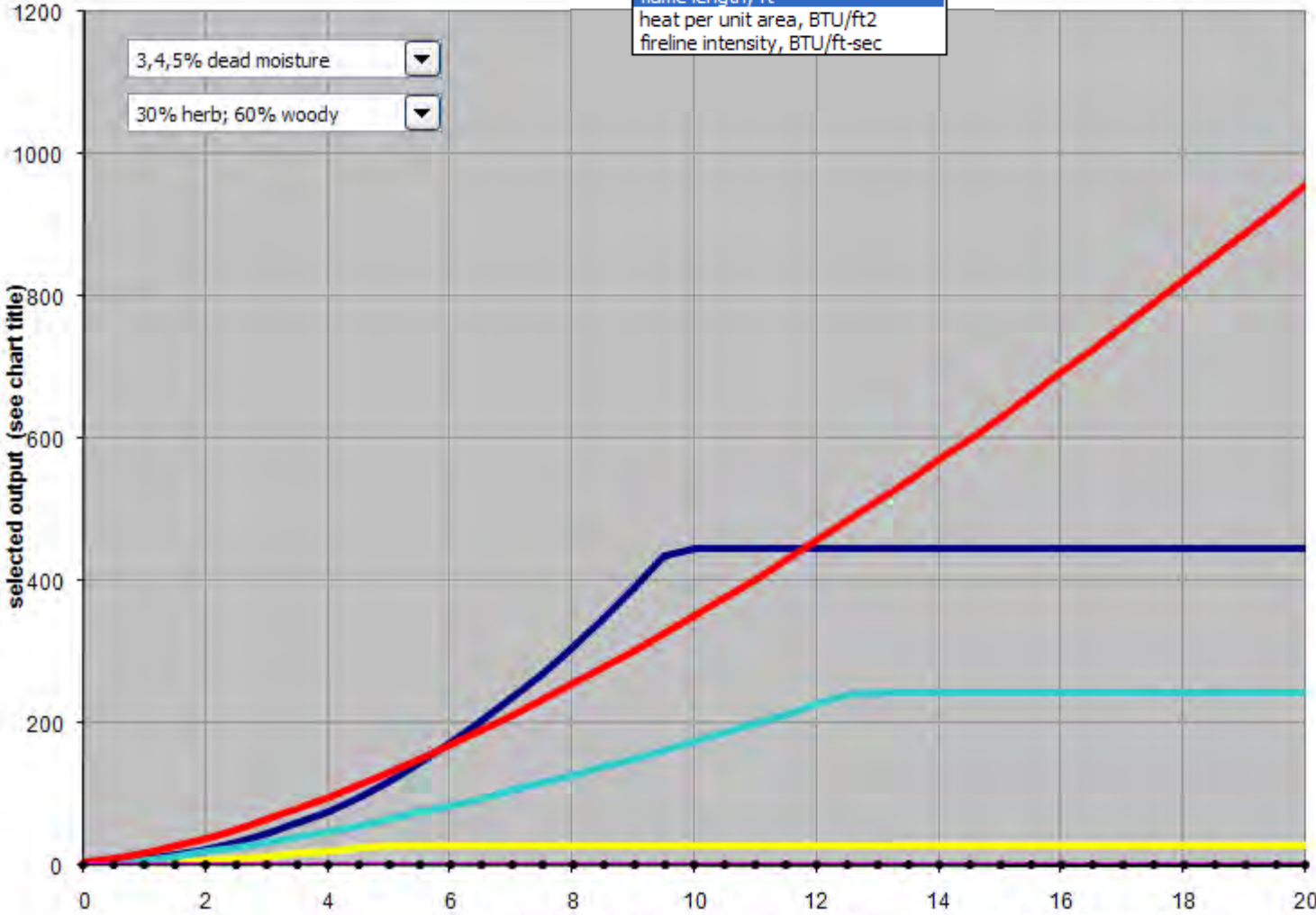
**Related Document:** [Nomographs for estimating surface fire behavior characteristics](#)

**Related Resources:** The new fuel models relate to the following tools:

- flame length, ft
- rate of spread, ch/hr
- flame length, ft
- heat per unit area, BTU/ft<sup>2</sup>
- fireline intensity, BTU/ft-sec

3,4,5% dead moisture

30% herb; 60% woody



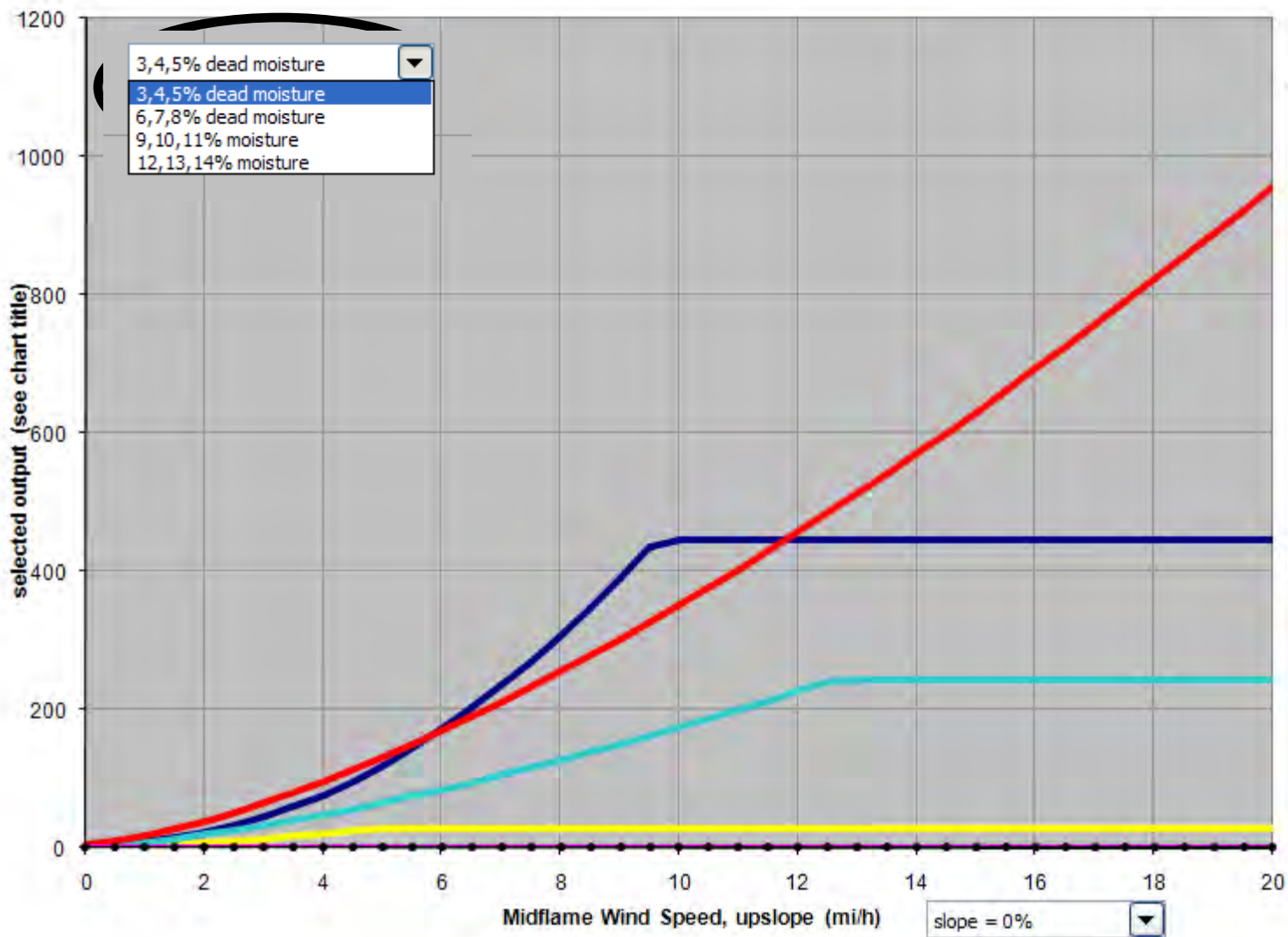
- 1
- GR1
- GR2
- GR4
- blank
- blank
- blank
- blank

slope = 0%





rate of spread, ch/hr

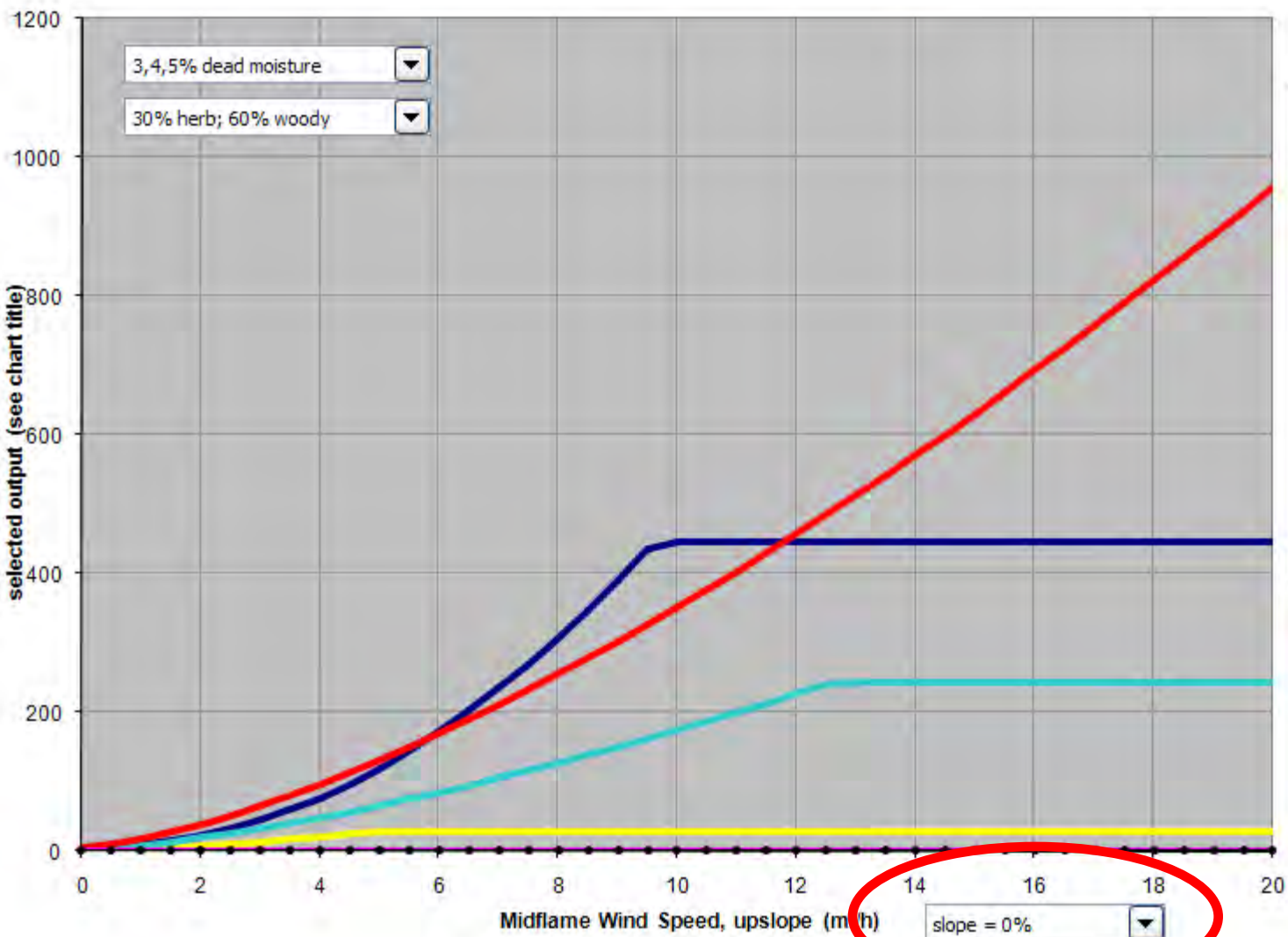


- 3,4,5% dead moisture
- 3,4,5% dead moisture
- 6,7,8% dead moisture
- 9,10,11% moisture
- 12,13,14% moisture

- 1
- GR1
- GR2
- GR4
- blank
- blank
- blank
- blank

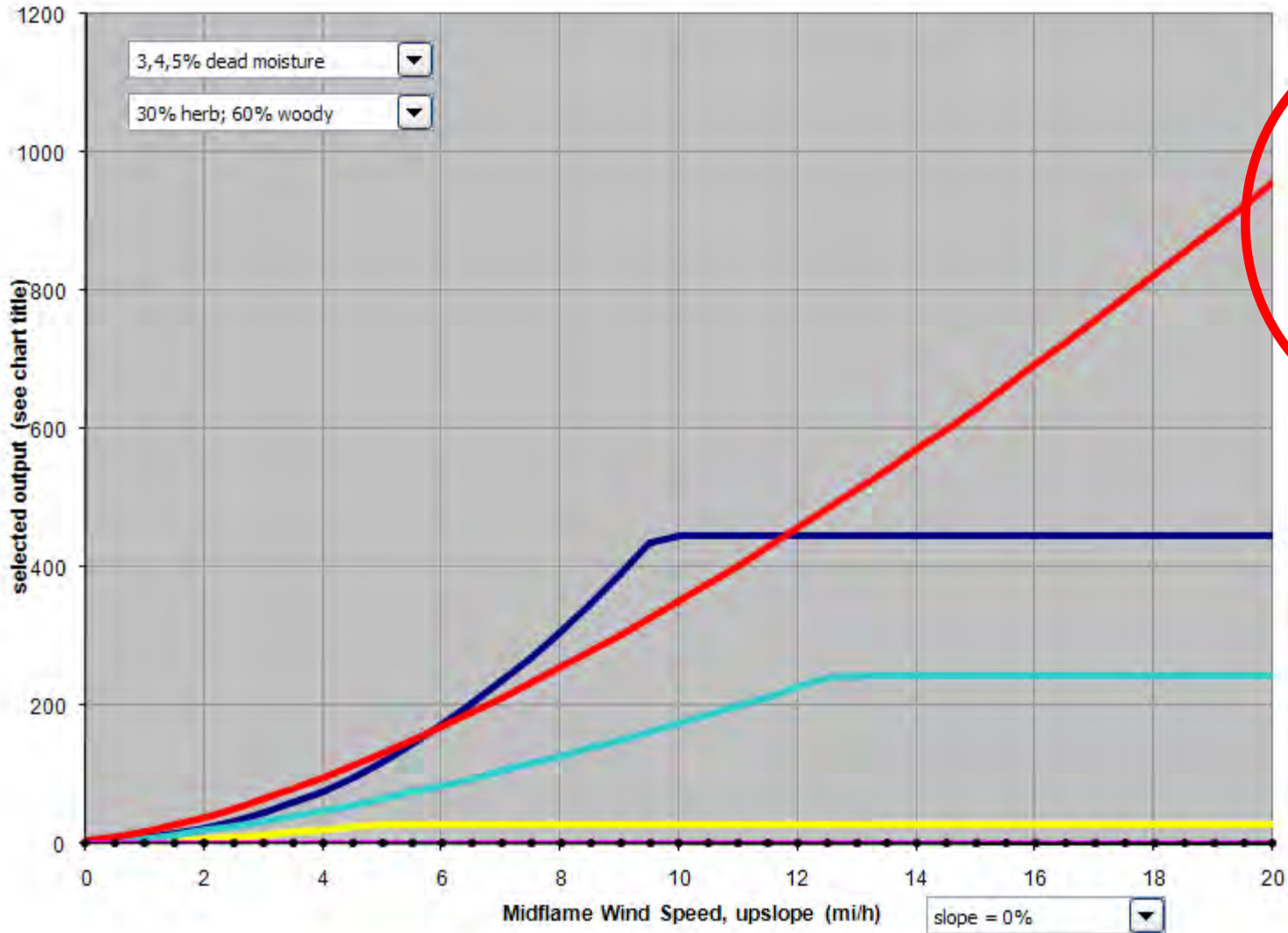
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rate of spread, ch/hr



- 1
- GR1
- GR2
- GR4
- blank
- blank
- blank
- blank

rate of spread, ch/hr



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- GR1
- GR2
- GR3
- GR4
- GR5
- GR6
- GR7

# Summary

- Three tools
  - Printed GTR
  - Electronic help file
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