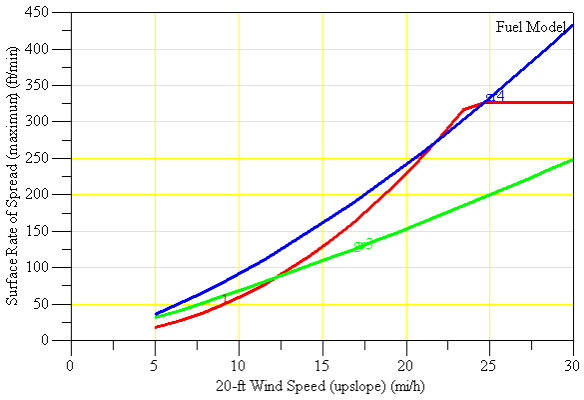
# Rate Of Spread (ROS) and Flame Lengths (FL)
# In Grass Fuel Types

The following graphs illustrate the ROS and FL in three different grass fuel models. The 1 fuel model is the traditional short grass fire behavior grass fuel model representing **light fuel loading.** The Gr3 fuel model represents a grass fuel model with **moderate fuel loading** and the Gr4 fuel model represents a grass fuel model with **heavy fuel loading**. These adjective fuel loadings of light, moderate, and heavy are subjective and are used here to show the variable fuel conditions in the field.

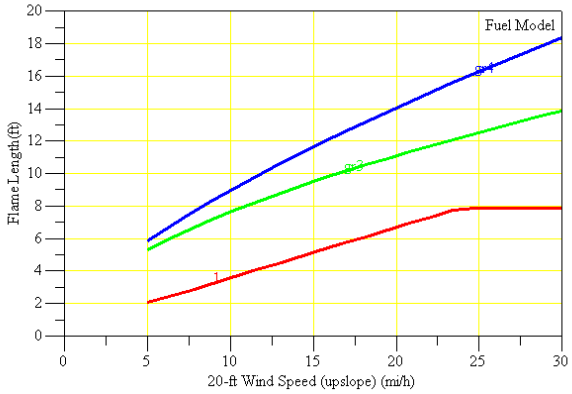
Fine dead fuel moisture is a critical input in determining ROS and FL in grass fuel models. The instructions and reference tables for determining fine dead fuel moisture can be found on page B-22 in the Appendix B of your fireline handbook. The graphs below range from 5% to 13% fine dead fuel moisture.

To use these graphs, first find the graph that represents the fine dead fuel moisture that matches your expected conditions. FL and ROS are plotted by 20-foot windspeed from 5 to 30 mph. Tim Stubbs has put together a good explanation of the concept of adjective fire behavior and how firefighters can use FL and ROS to plan suppression tactics. http://www.tamu.edu/ticc/predictive_services/adjective_fire_behavior.pdf

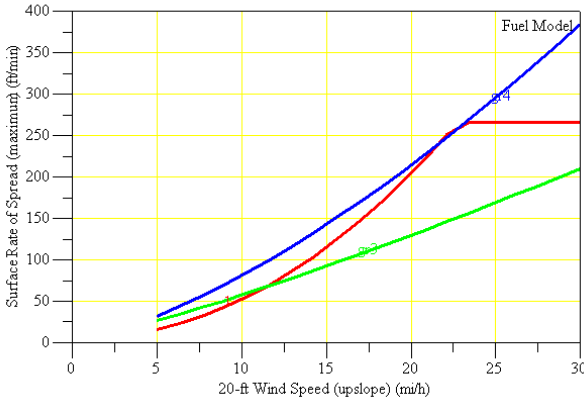
ROS with 5% Fine Dead Moisture



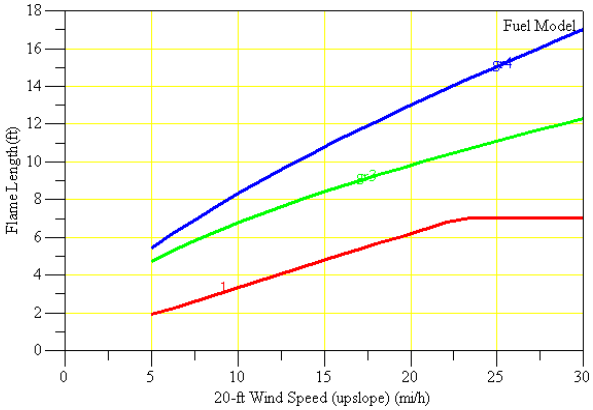

FL with 5% Fine Dead Moisture



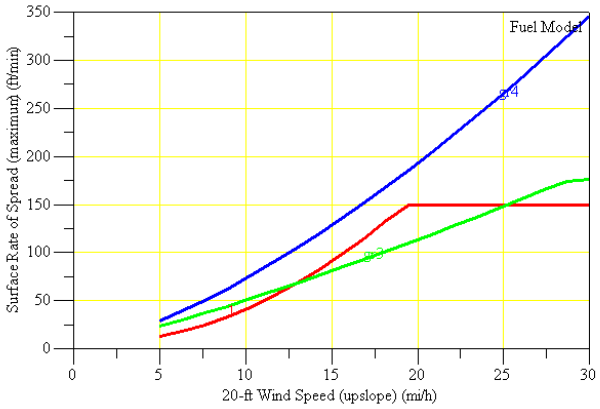

ROS with 7% Fine Dead Moisture



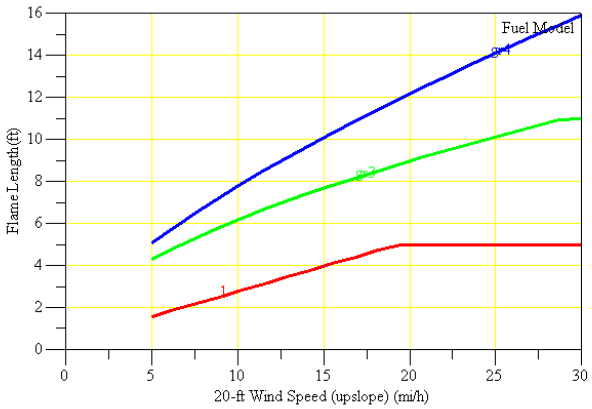

FL with 7% Fine Dead Moisture



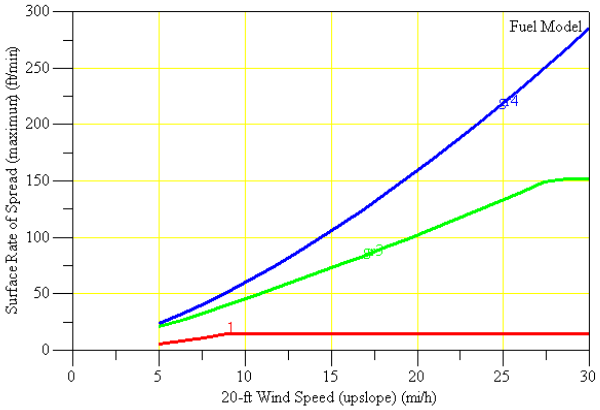
ROS with 9% Fine Dead Moisture



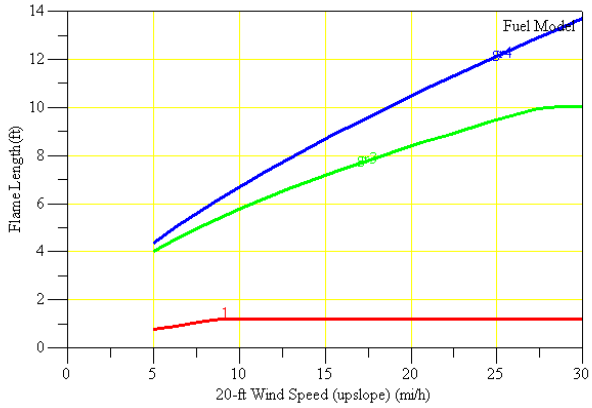

FL with 9% Fine Dead Moisture



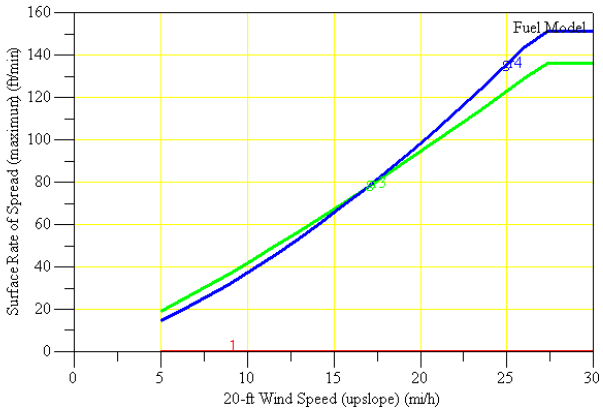

ROS with 11% Fine Dead Moisture




FL with 11% Fine Dead Moisture




ROS with 13% Fine Dead Moisture




FL with 13% Fine Dead Moisture