Smorgasbord of prescribed fire

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Prescribed Fire for Private Lands
UC Berkeley's Blodgett Research Forest
May 17, 2019

Smorgasbord of prescribed fire

- Proper Protective Equipment
- Primer on Fire Behavior

Proper Protective Equipment (PPE)

Prescribed Fire on Private Lands Workshop at Sierra Foothill Research and Extension Center, June 2018

Proper Protective Equipment (PPE)

Minimum recommendations:

- ANSI Z87 eye protection
- Head protection (cotton hat or hardhat)
- Pants
- Long sleeve shirt
- All outer and inner clothes are a natural fiber (cotton, wool, or silk) or Nomex
- Leather gloves
- Leather boots without metal

Other options:

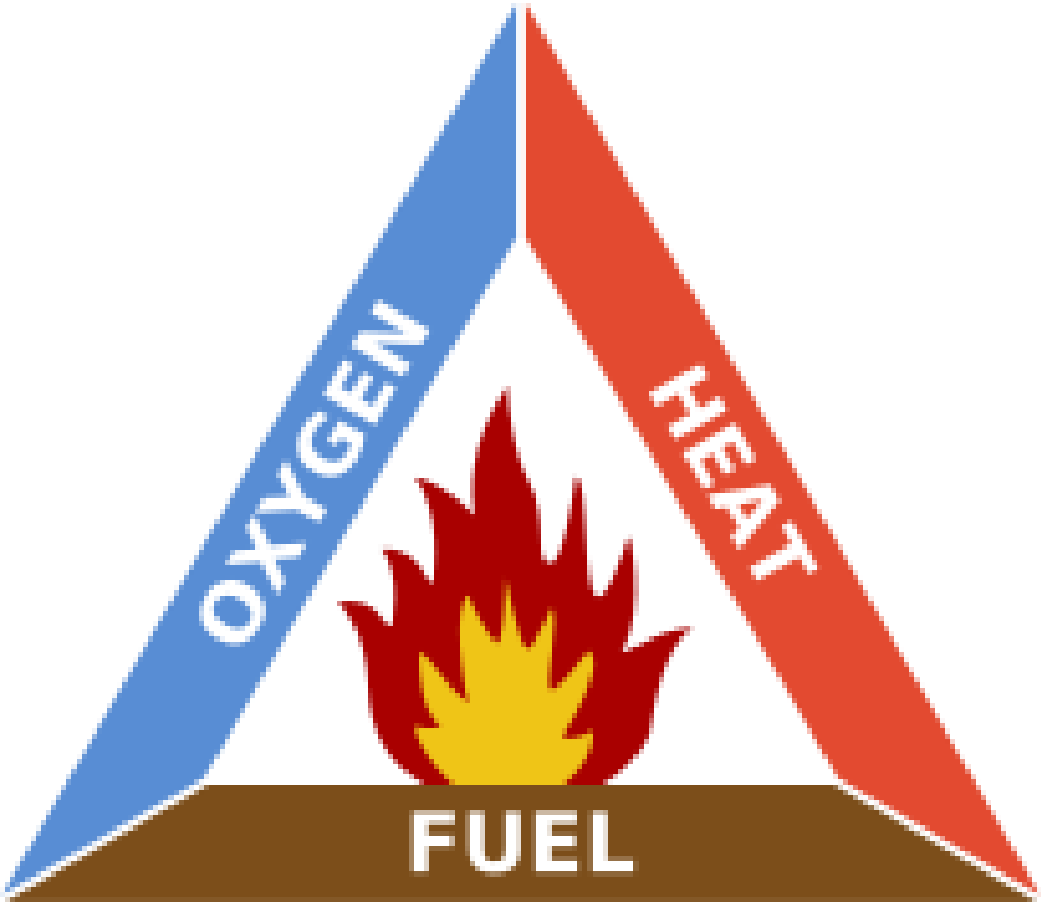
- Goggles
- Hard hat with neck shroud
- Nomex pants and shirt
- Fire shelter

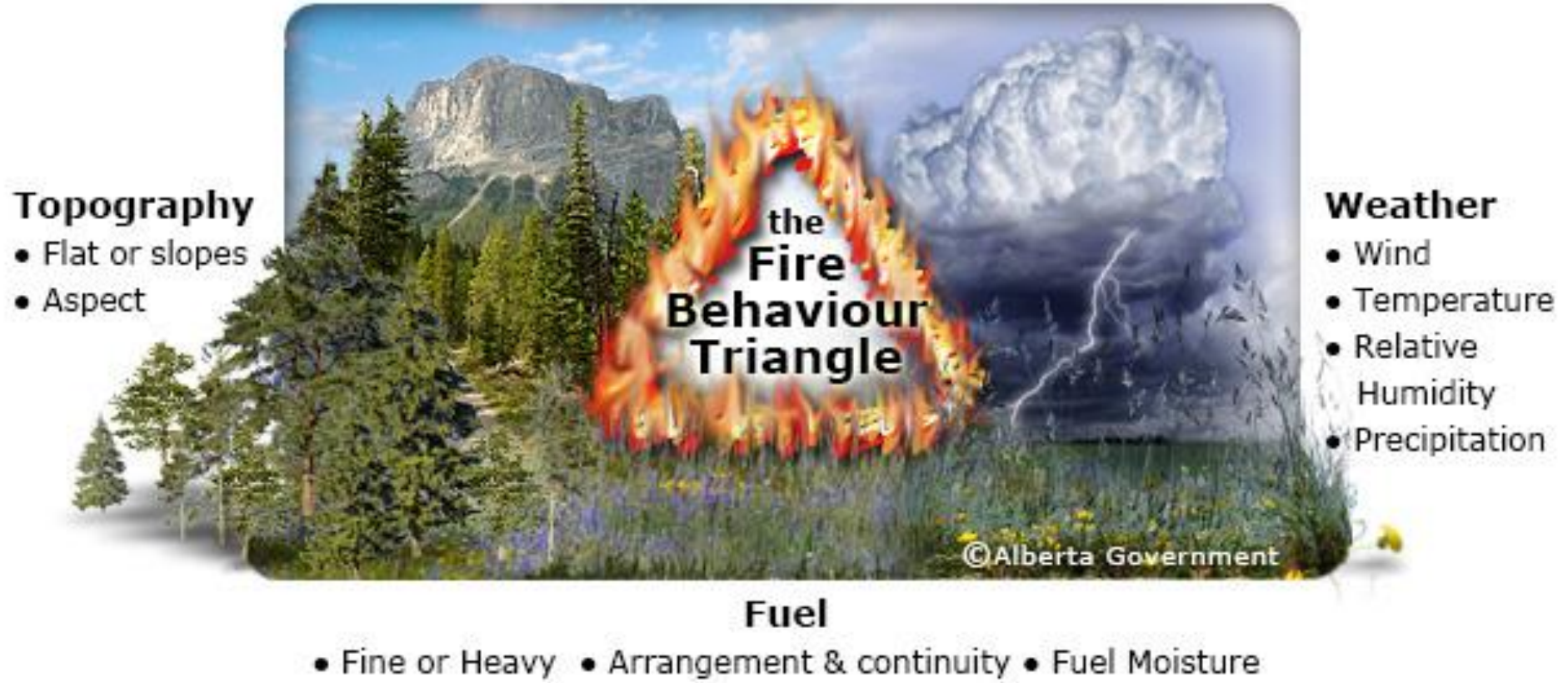
Smorgasbord of prescribed fire:

- Proper Protective Equipment
- Primer on Fire Behavior

What is fire?

What is fire?





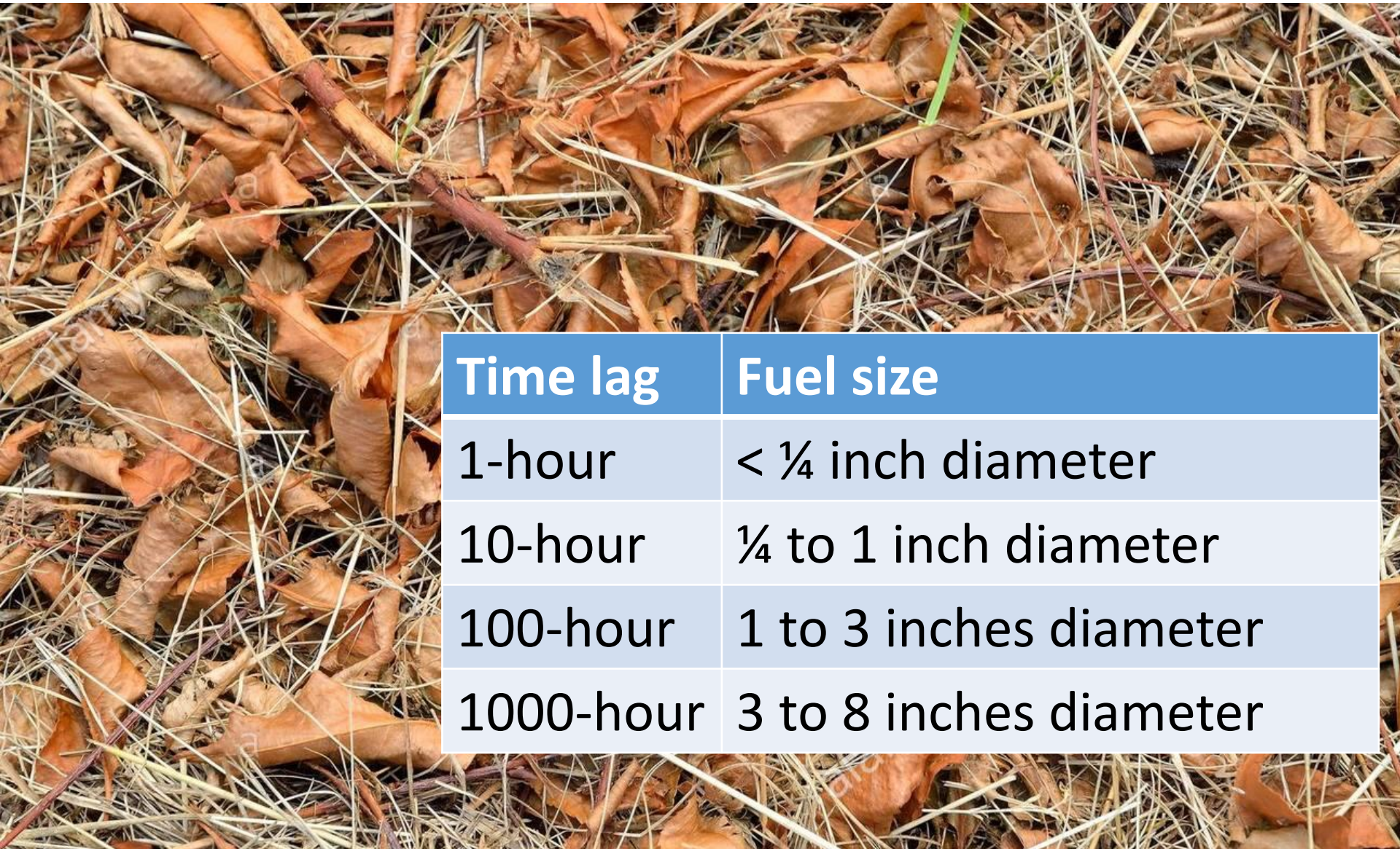
http://wildfire.alberta.ca/wildfire-prevention-enforcement/wildfire-behaviour.aspx

Fires can behave very differently depending on conditions


Tree Crowns
Surface Fuel


Tree Crowns
Ladder Fuel
Surface Fuel

Dead and Down Fuel Moisture



Time lag	Fuel size
1-hour	< ¼ inch diameter
10-hour	¼ to 1 inch diameter
100-hour	1 to 3 inches diameter
1000-hour	3 to 8 inches diameter

Fire behavior models

13 Anderson Fuel Models

Grass

Shrub

Timber

Logging Slash

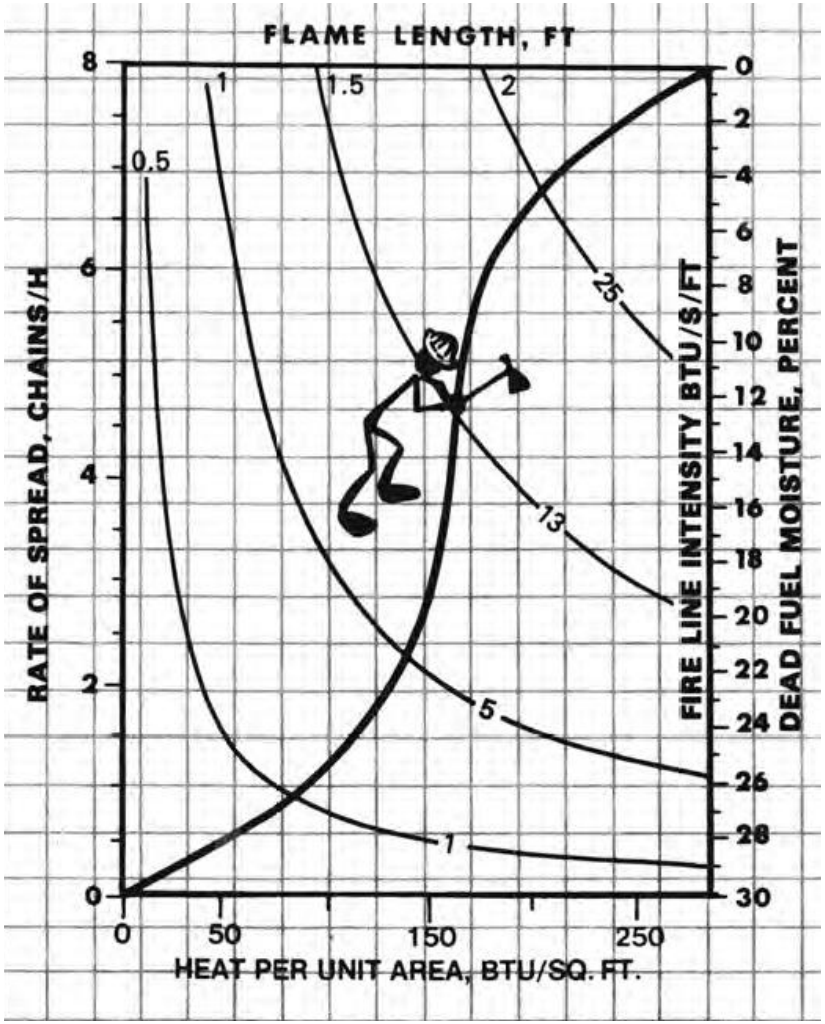
Anderson, H. E. 1982. Aids to determining fuel models for estimating fire behavior. Gen. Tech. Rep. INT- 122. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 22 p.

Early fire behavior models

National Wildfire Coordinating Group. 1992. Fire Behavior Nomograms.

Early fire behavior models

Low wind speed



National Wildfire Coordinating Group. 1992. Fire Behavior Nomograms.

Fire Behavior Models

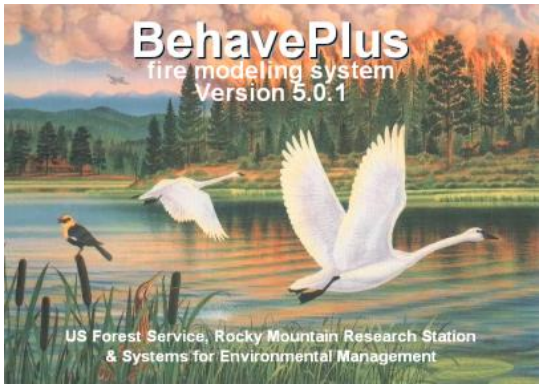
How will the fire behave given uniform conditions?

- Intensity
- Rate of spread
- Flame length
- Spotting distance
- Probability of ignition from firebrands

What are the expected fire effects?

- Fuel consumption
- Tree mortality
- Smoke produced

How will the fire behave given realistic conditions?



Spring, 24% fuel moisture

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BehavePlus 6.0.0 Fri, May 17, 2019 at 14:13:33

my backyard

Head Fire

Surface Fire Rate of Spread (ch/h)

Midflame Wind Speed	Slope Steepness %					
mi/h	0	10	20	30	40	50
0	0.7	0.8	1.1	1.7	2.4	3.4
10	22.1	22.2	22.5	23.1	23.8	24.8
20	71.2	71.3	71.7	72.2	73.0	74.0
30	85.0	85.0	85.0	85.0	85.0	85.0
40	85.0	85.0	85.0	85.0	85.0	85.0

Spring, 24% fuel moisture

BehavePlus 6.0.0 - [unnamed01.bpr]

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my backyard

Head Fire

Surface Fire Flame Length (ft)

Midflame Wind Speed	Slope Steepness %					
mi/h	0	10	20	30	40	50
0	0.2	0.2	0.2	0.2	0.3	0.3
10	0.4	0.4	0.4	0.4	0.4	0.4
20	0.4	0.4	0.4	0.4	0.4	0.4
30	0.4	0.4	0.4	0.4	0.4	0.4
40	0.4	0.4	0.4	0.4	0.4	0.4

Desired Fire effects

- Tree mortality
- Fuel consumption

FOFEM 6.3.1

File Options Help

Project File

Region PacificWest

Fuel - Smoke - Soil | Mortality

ABAM - Abies amabilis -- Pacific silver fir ---------->>

Flame Length
Scorch Height
10

Low Fire Severity

Post Fire Injury

	Species	Density	DBH	Height	C/R	Graph
	PIPO	10.0	40	100	6	☑
	PIPO	10.0	10	80	5	☑
	PIPO	10.0	5	20	6	☑
	QUKE	30	12	30	6	☑
▶	QUKE	5	80	70	9	☑
*						☐

FFI File C:\Users\wilkinkate\AppData\Local\FOFEM6.3.1\FFI_Sample.FFI

Plot TESTFOREST1_::_PreBurn

Close

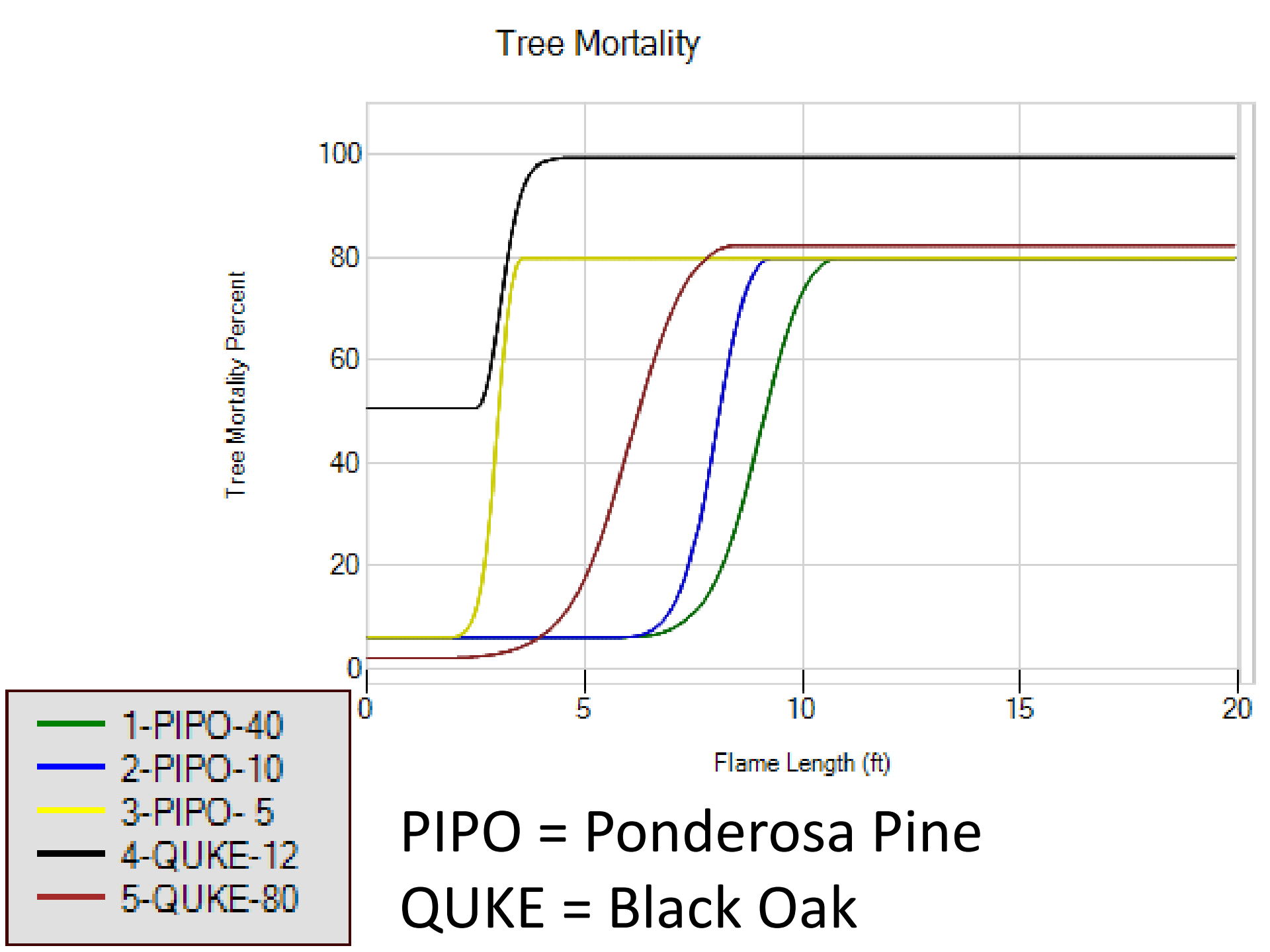
Load All 0 Errors

Reports

Mortality

Clear Report

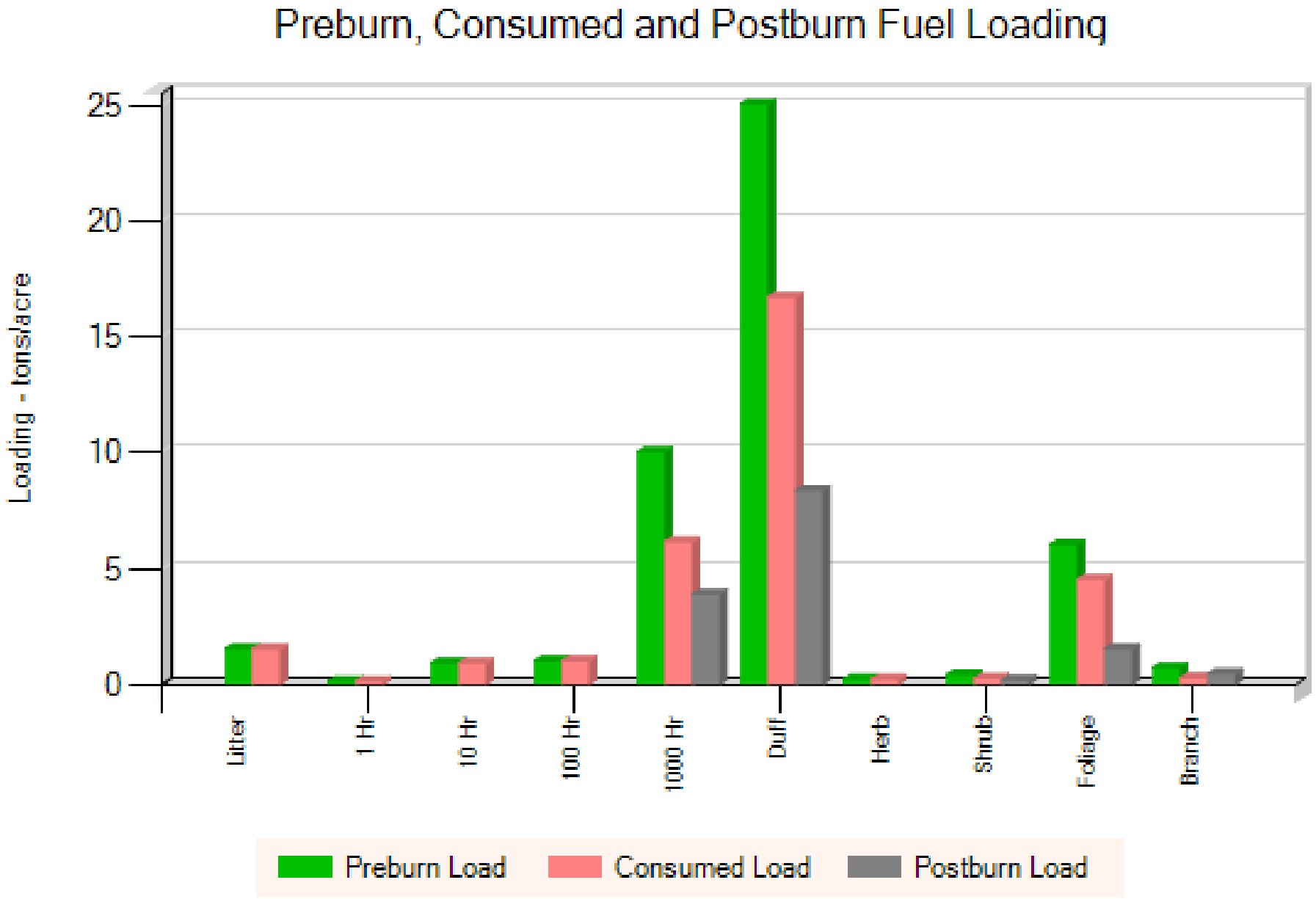
Report Totals



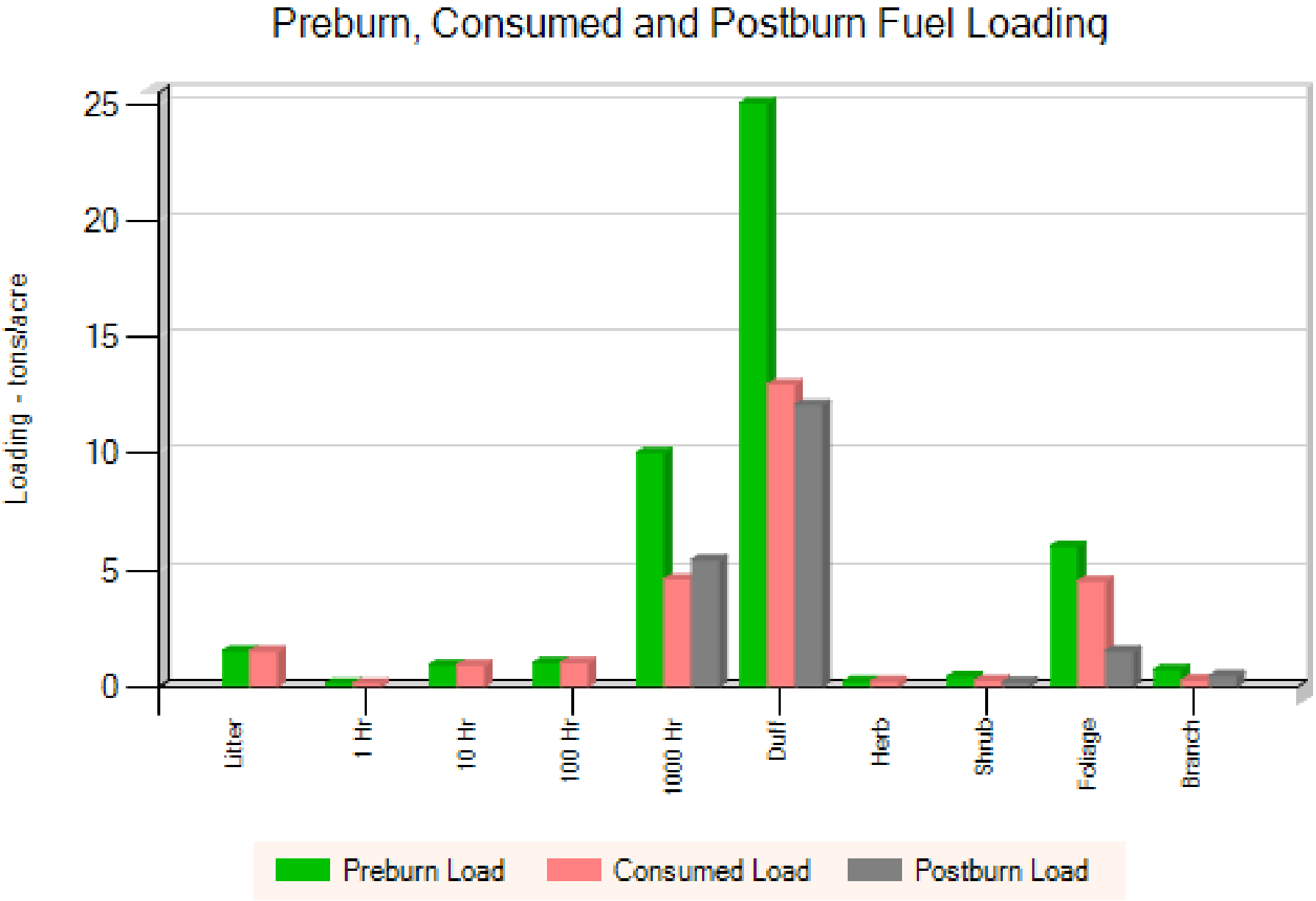
PIPO = Ponderosa Pine

QUKE = Black Oak

Summer, Dry fuel moisture



Summer, Moderate moisture

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Surface Fuel


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