Fuel Moisture Sampling
IN ALASKA

Alaska Fire Science Consortium Workshop
Oct 11, 2012
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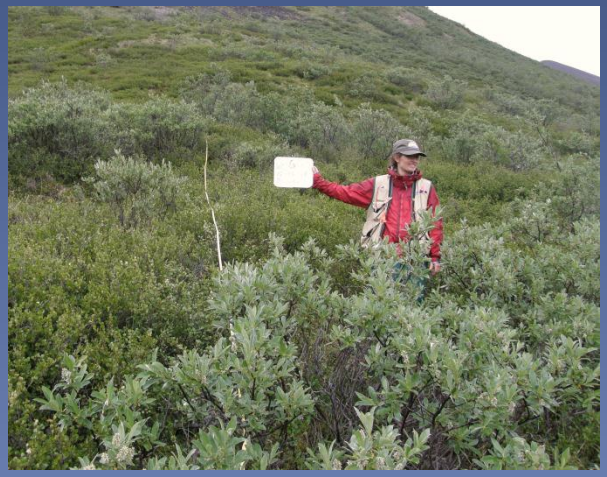
Fuel Moisture Types

- Duff (Moss & Organics)
- Foliar (Spruce)
- Live woody (Shrubs)
- Live herbaceous (Grass & Forbs)



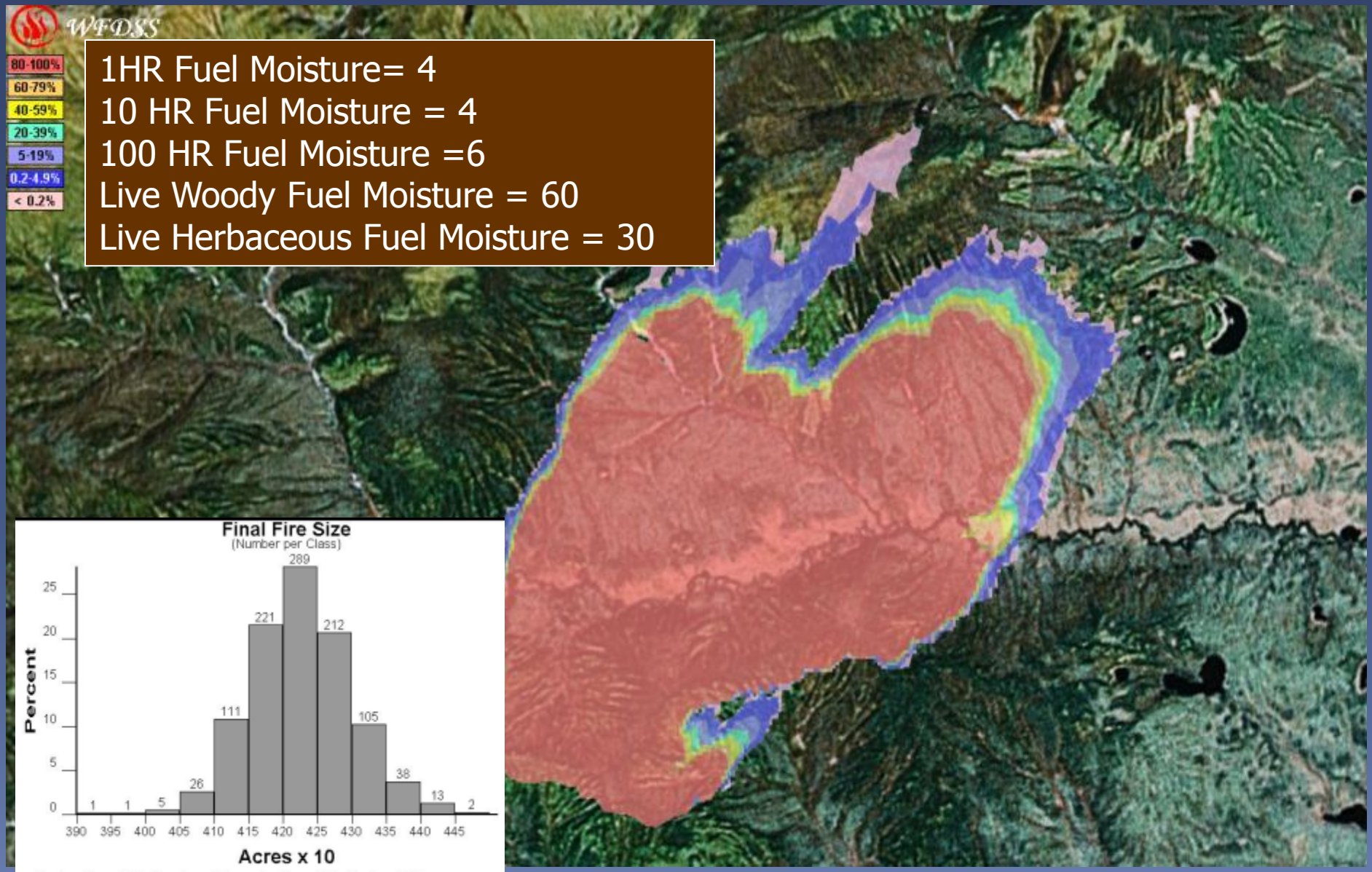
Why Duff Sample?

- To calibrate a weather station for CFFDRS. For example station start up values may be "Default" or "Overwintering" or "Actual" values.
  - Default: 85 FFMC, 15 DMC, 6 DC
  - Overwintering – using last fall's values
- For prescribed fire.
  - To determine within prescription
  - To start a new portable RAWS or if no nearby RAWS
- Weather station has been down for a while (to start indices)
- Staffing – DNR? Verify indices from RAWS

Why Live Fuel Moisture Sample?

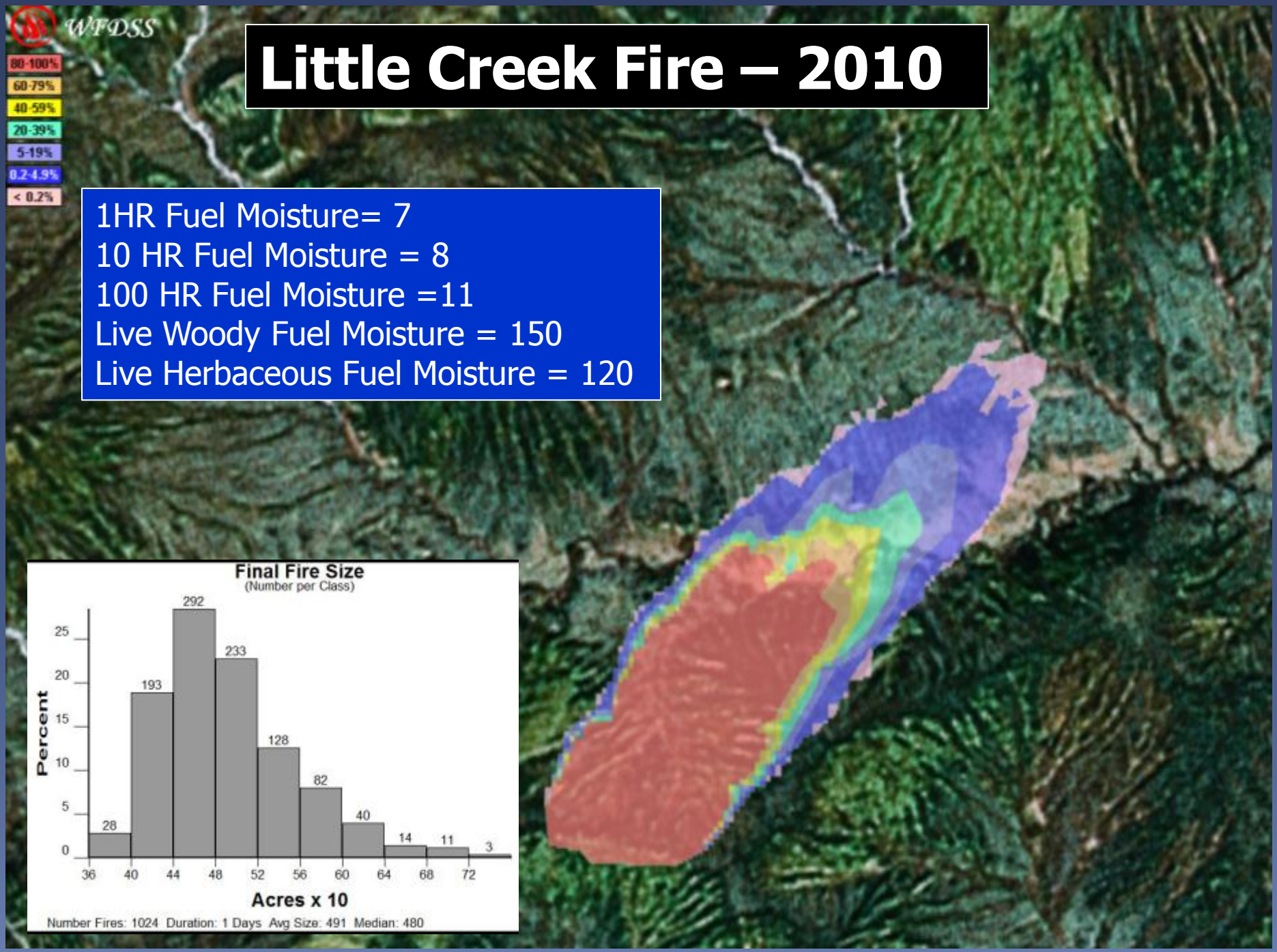
- CFFDRS FBM - Foliar moisture relates to crown fire potential
- Behave Plus: Live herbaceous, Live woody and Foliar moisture are inputs for surface and crown fire behavior
- WFDSS – FSPro and STFB are sensitive to Live herbaceous, Live woody and Foliar Moistures
- Prescribe fire – example military burning in grass (Eric Miller)

Little Creek Fire – 2010



1HR Fuel Moisture= 4
10 HR Fuel Moisture = 4
100 HR Fuel Moisture =6
Live Woody Fuel Moisture = 60
Live Herbaceous Fuel Moisture = 30

Little Creek Fire – 2010



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Live Herbaceous Fuel Moisture = 120

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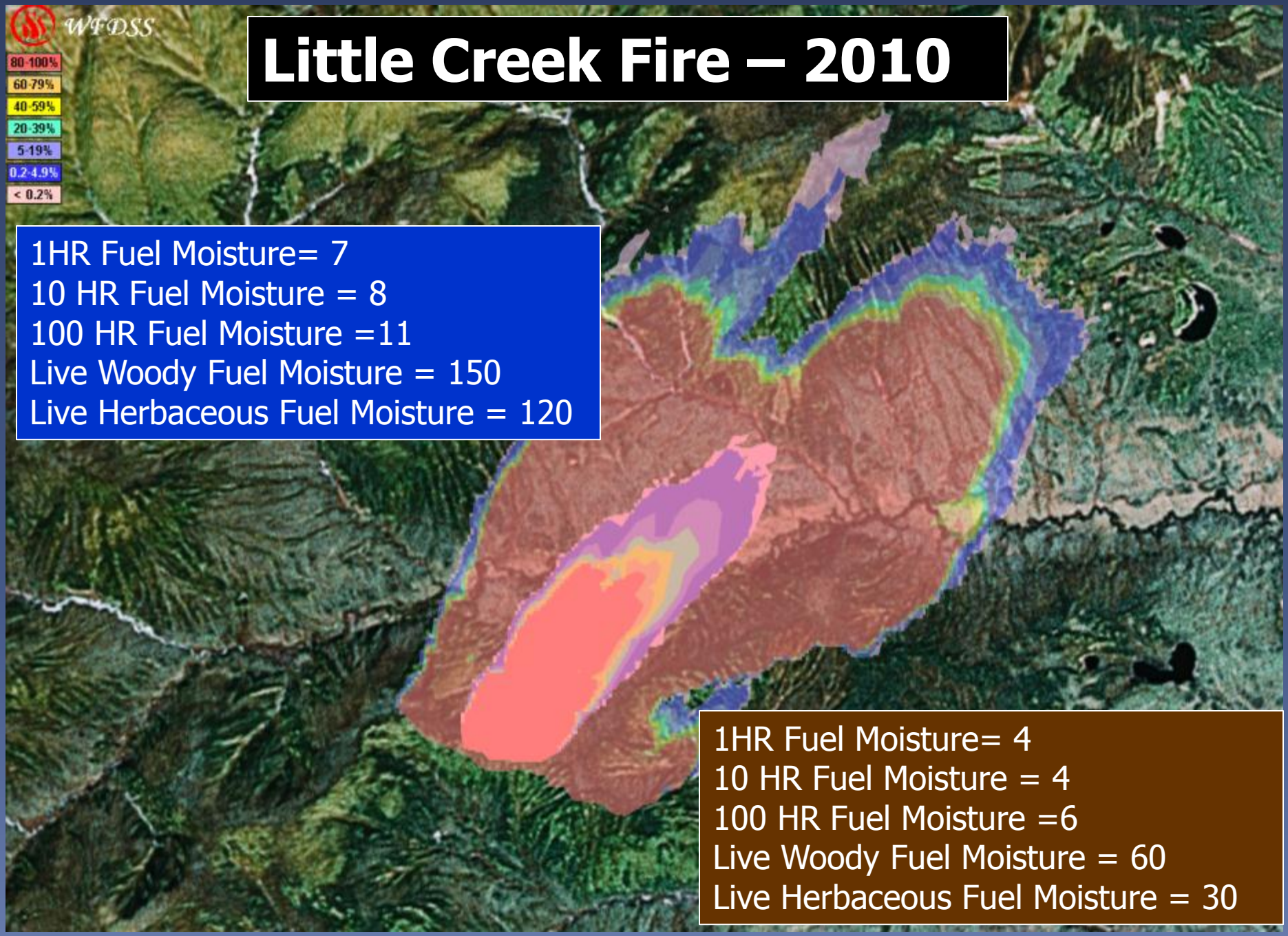

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Fuel Moisture Training in AK

- May 2012 – 1 day training
- 14 participants - interagency
- Developed cheat sheets for sampling
- Trained for seasonal sampling

Seasonal sampling 2012

- Fairbanks – 2 sites
- Anchorage – Campbell Tract
- Denali
- Tok
- Harding Lake

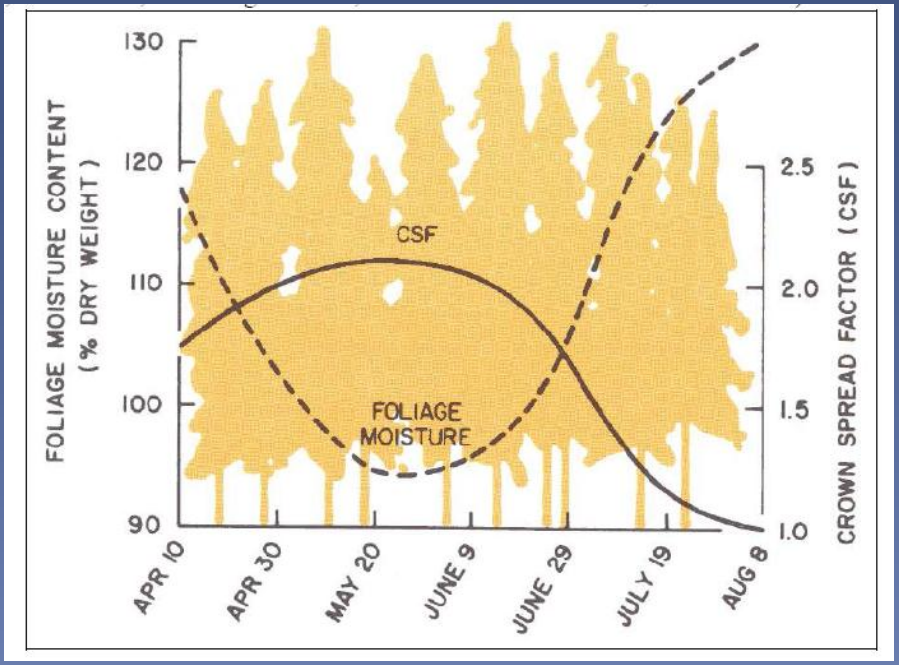
- THANKS TO ALL! – BLM, FWS, NPS, STATE

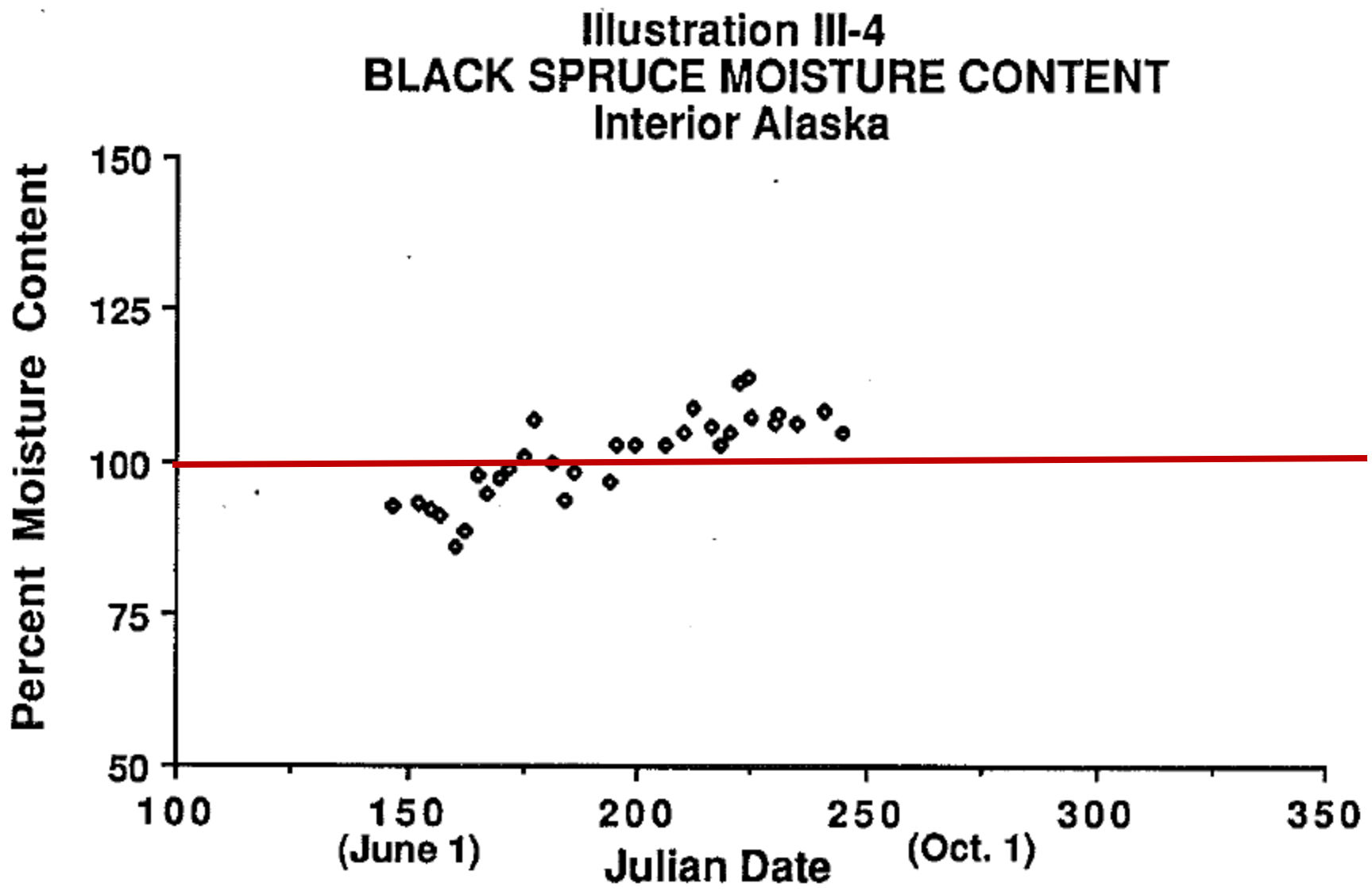
Foliar Moisture

- Moisture content of the overstory **conifer** needles and stems.
  - BEHAVE - threshold for transition to crown fire
  - CFFDRS FBM - relates to crown fire potential

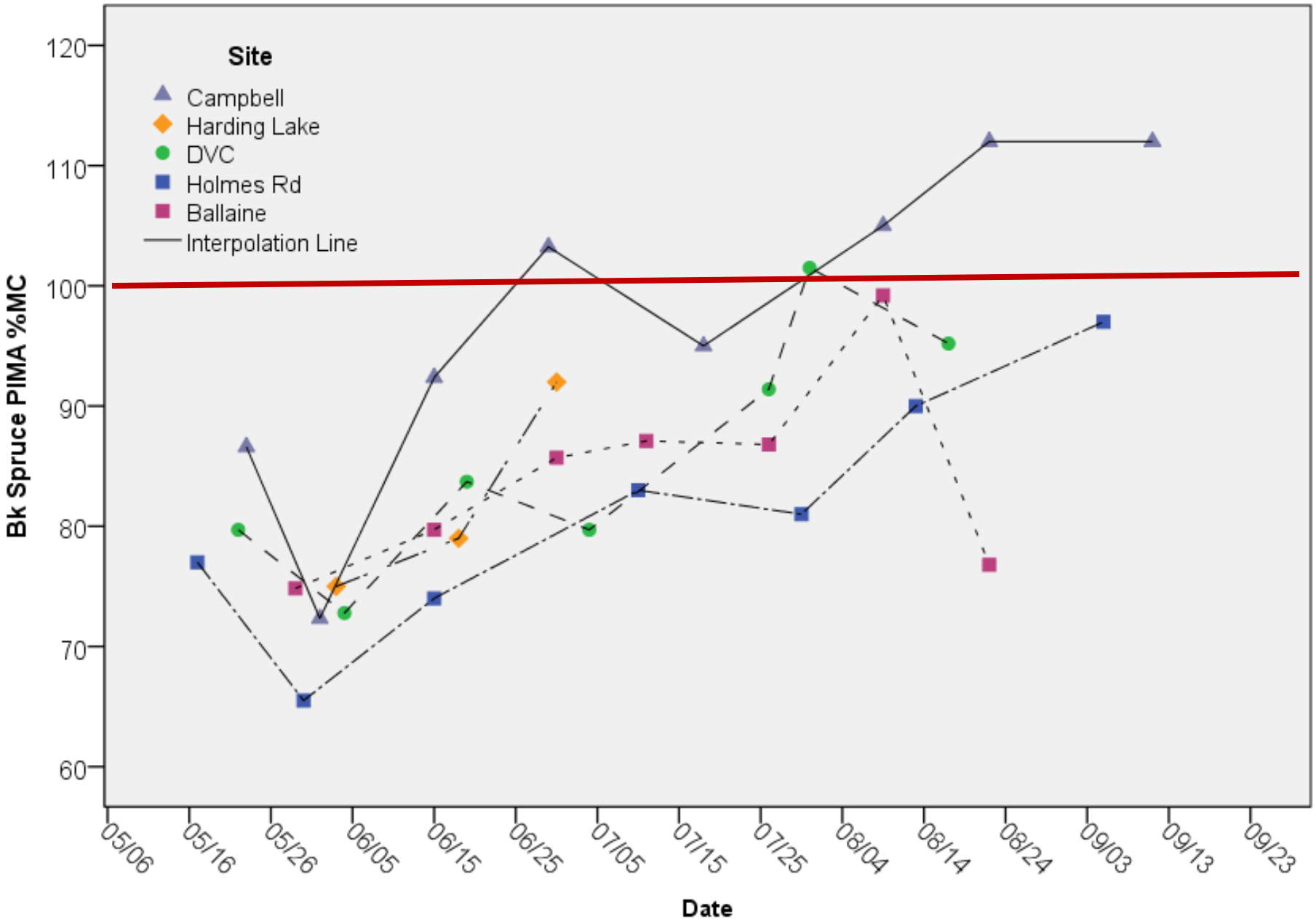
Foliar Moisture Estimates

- BEHAVE: Crown fire risk with values from 100 - 120% in PNW (Agee et al. 2002)
- FBP (Canadian): Crown spread factor and foliar moisture in Canada (Alexander 2010)





Source: RX-340 class 1995, M. Miller


Site
Campbell
Harding Lake
DVC
Holmes Rd
Ballaine
Interpolation Line
Bk Spruce PIMA %MC
120
110
100
90
80
70
60
05/06
05/16
05/26
06/05
06/15
06/25
07/05
07/15
07/25
08/04
08/14
08/24
09/03
09/13
09/23
Date

Live Woody Moisture

- Fuel moisture content of the **shrub** foliage and fine stems.

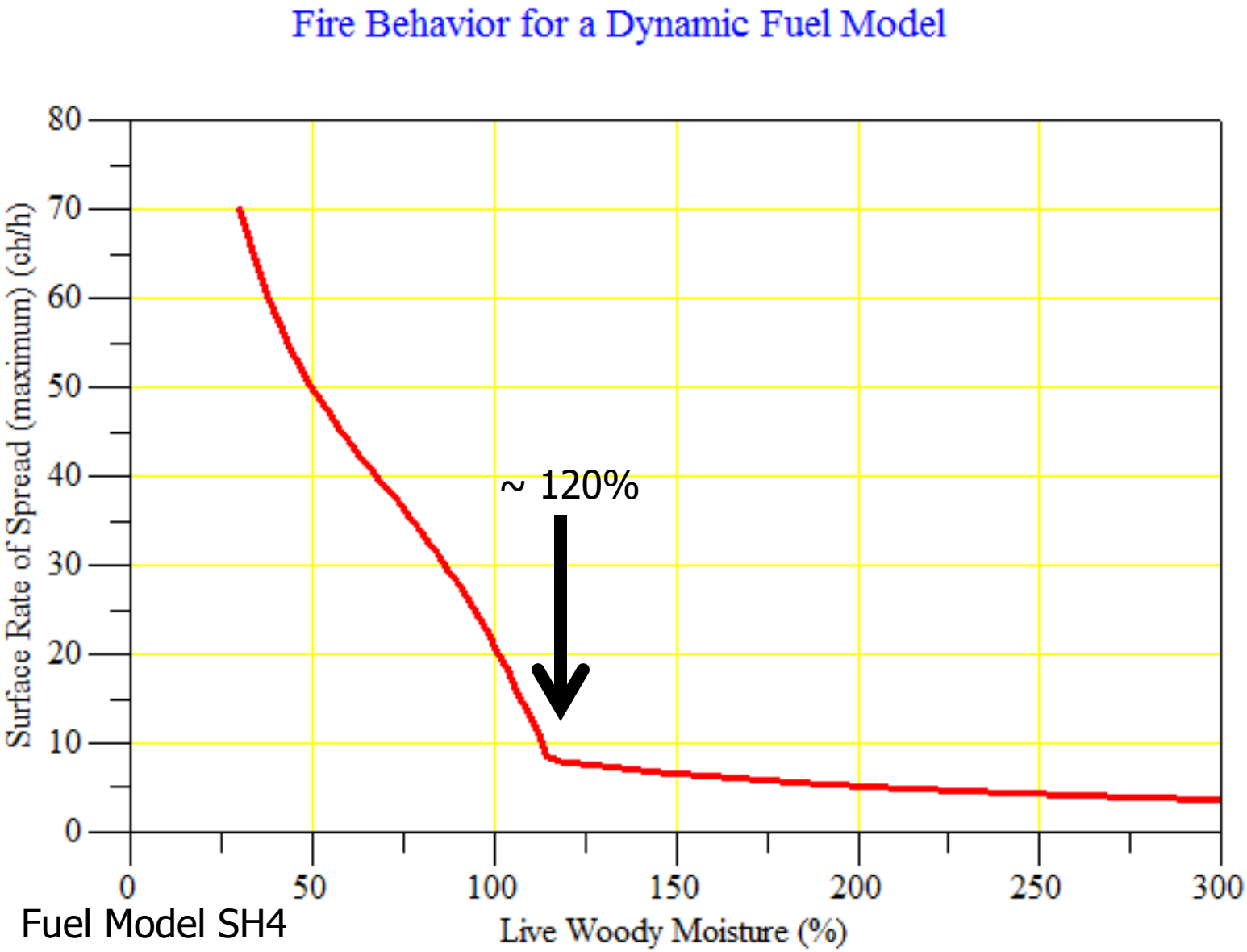
Live Woody Fuel Moisture Estimates

Behave

Guidelines for Estimating Live Fuel Moisture Content

Moisture	Stage of Vegetative Development
300%	Fresh foliage, annuals developing, early in growing cycle
200%	Maturing foliage, still developing with full turgor
100%	Mature foliage, new growth complete and comparable to older perennial foliage
50%	Entering dormancy, coloration starting, some leaves may have dropped from the stem
30%	Completely cured, treat as dead fuel

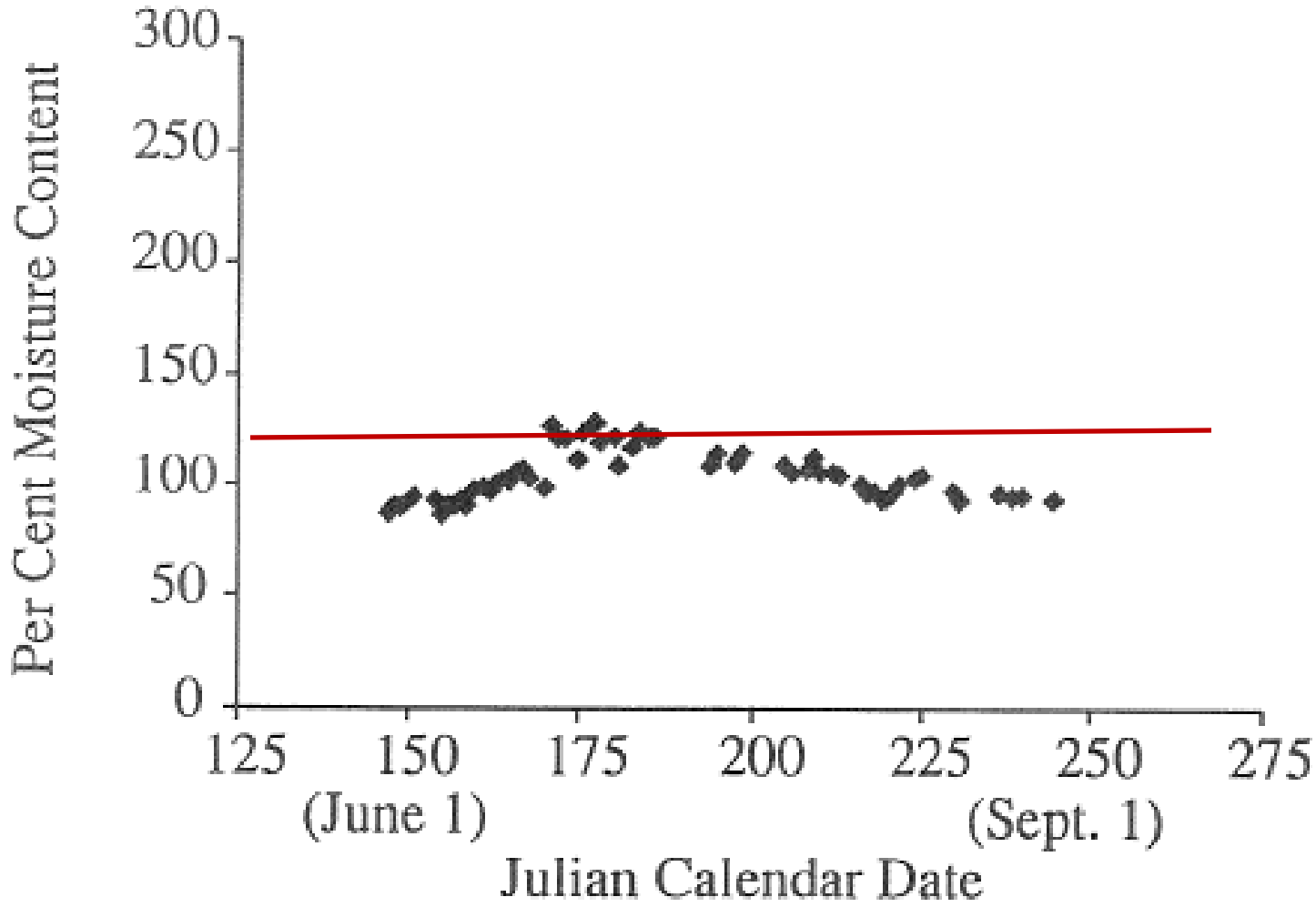
Impacts to rate of spread



Fuel Model SH4

Live Fuel Moisture Content

Labrador Tea (*Ledum groenlandicum*)



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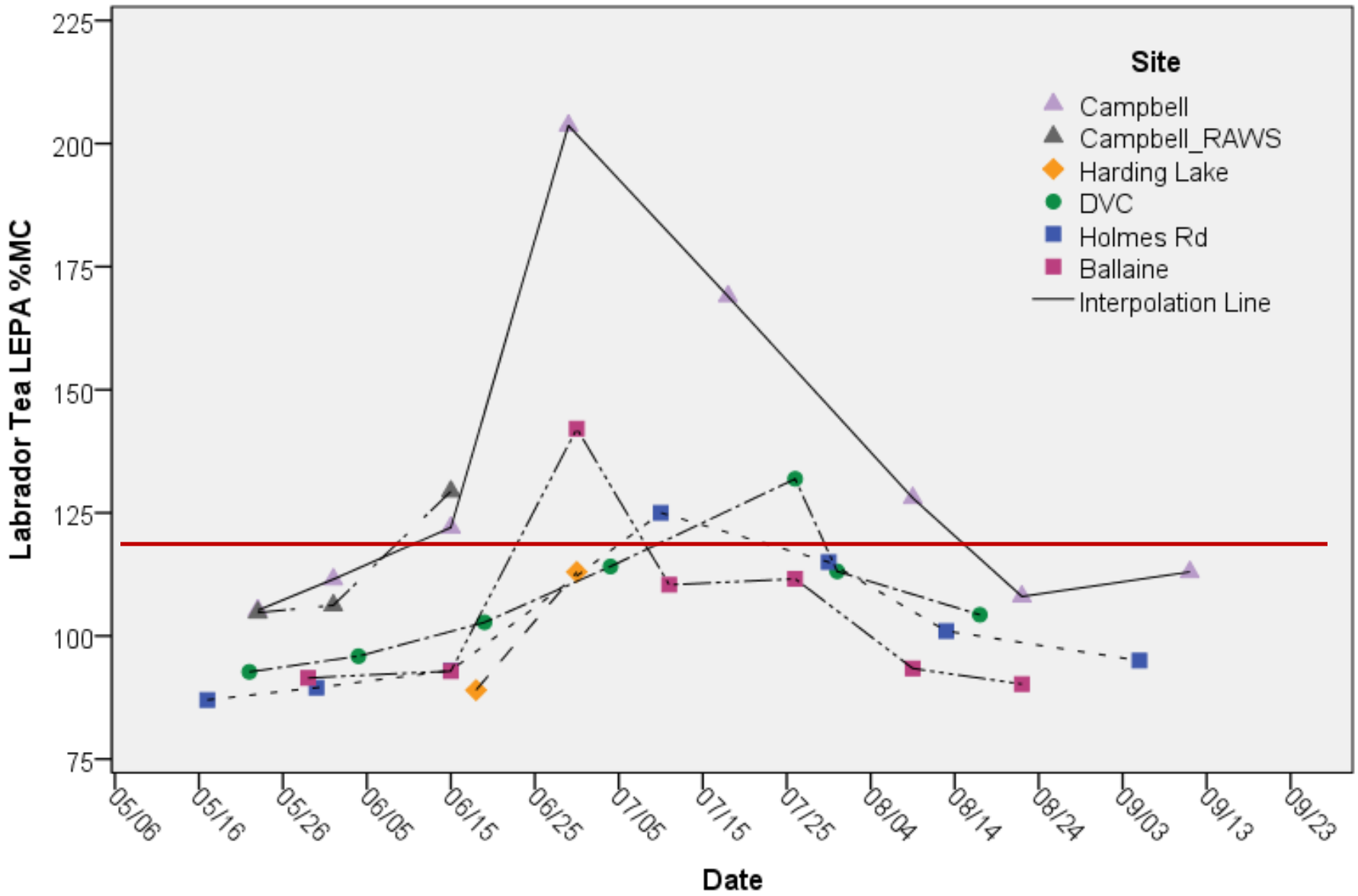
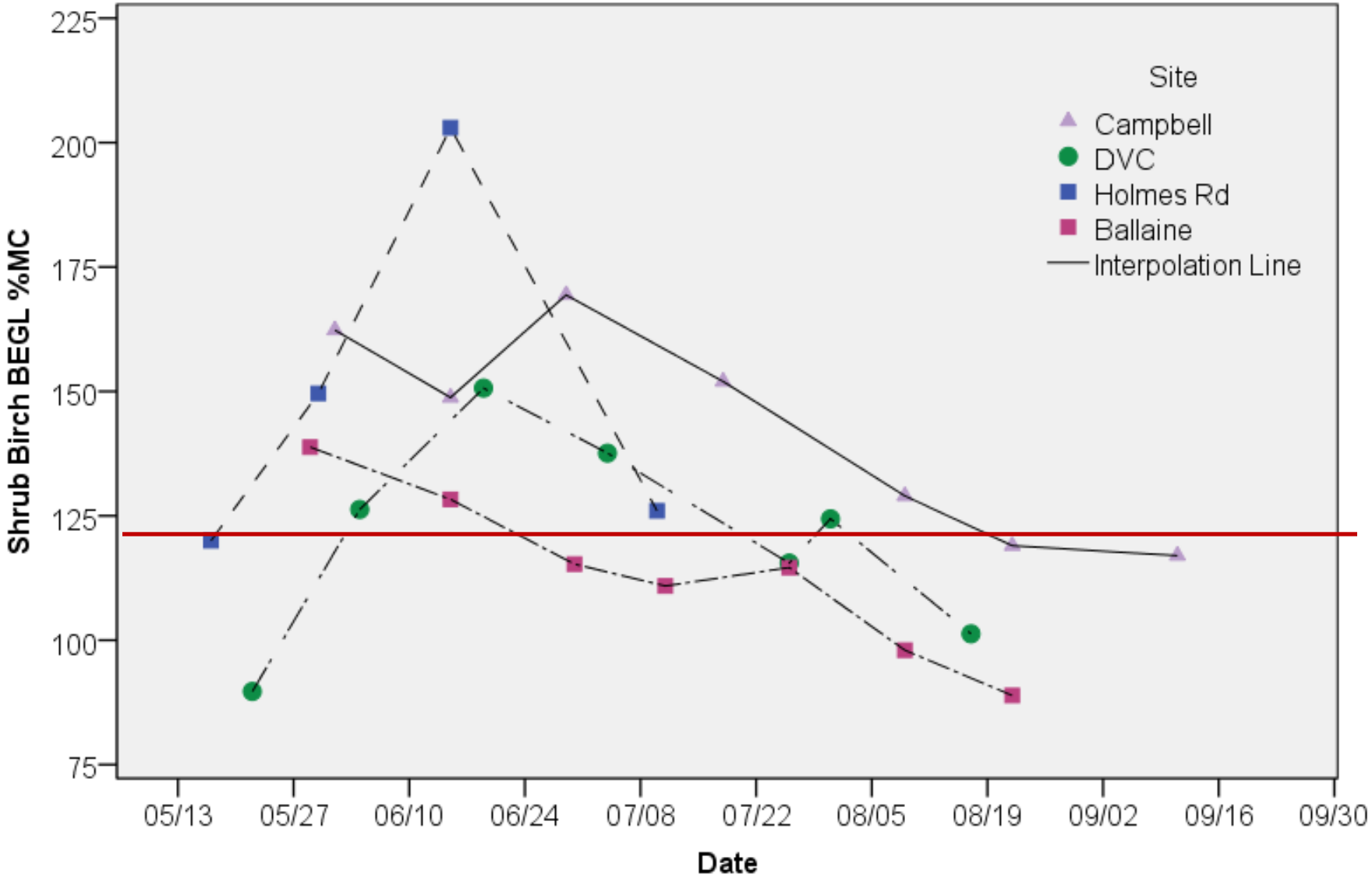
Labrador Tea – Fuel Moisture



Shrub birch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07/22
08/05
08/19
09/02
09/16
09/30
Date

Live Herbaceous Fuel Moisture

- Fuel moisture content of live grasses, sedges or herbs (non-shrubs).

Herbaceous MC Estimates

Fuel Load Transfer for Dynamic Fuel Models

Live herbaceous fuel moisture		Curing
120%		Uncured
98%		One-quarter cured
90%		One-third cured
75%		One-half cured
60%		Two-thirds cured
53%		Three-quarters cured
30%		Fully cured

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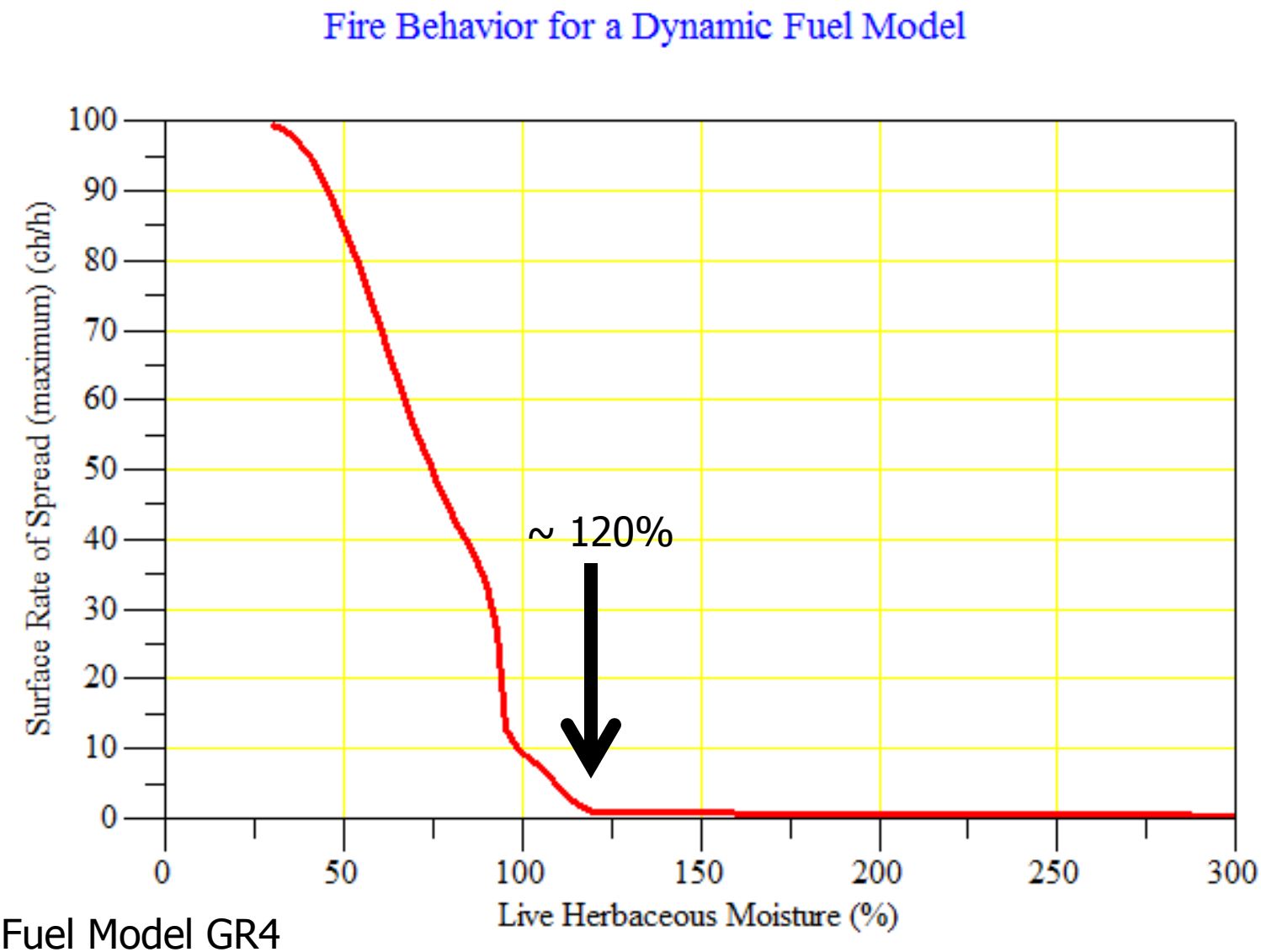
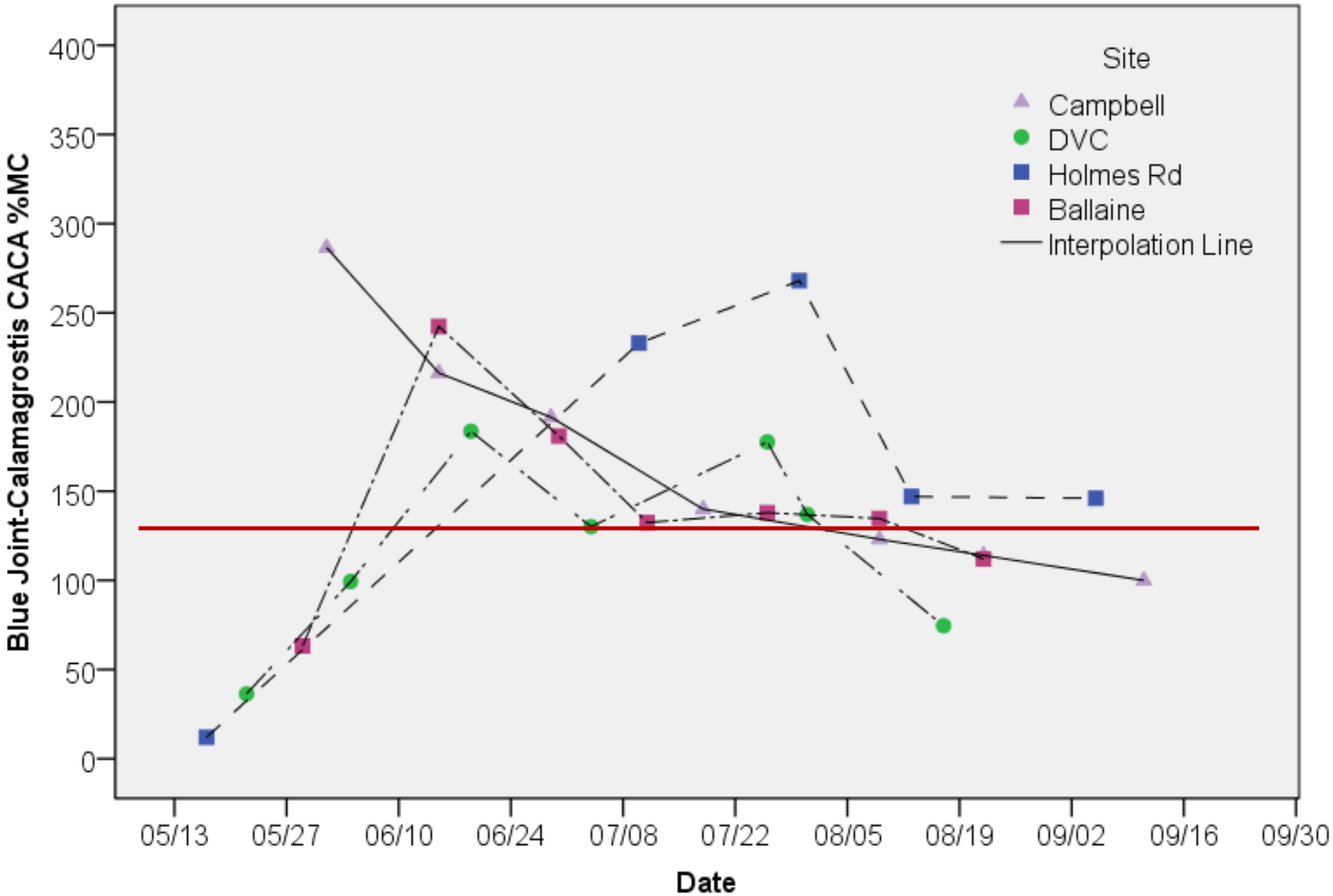
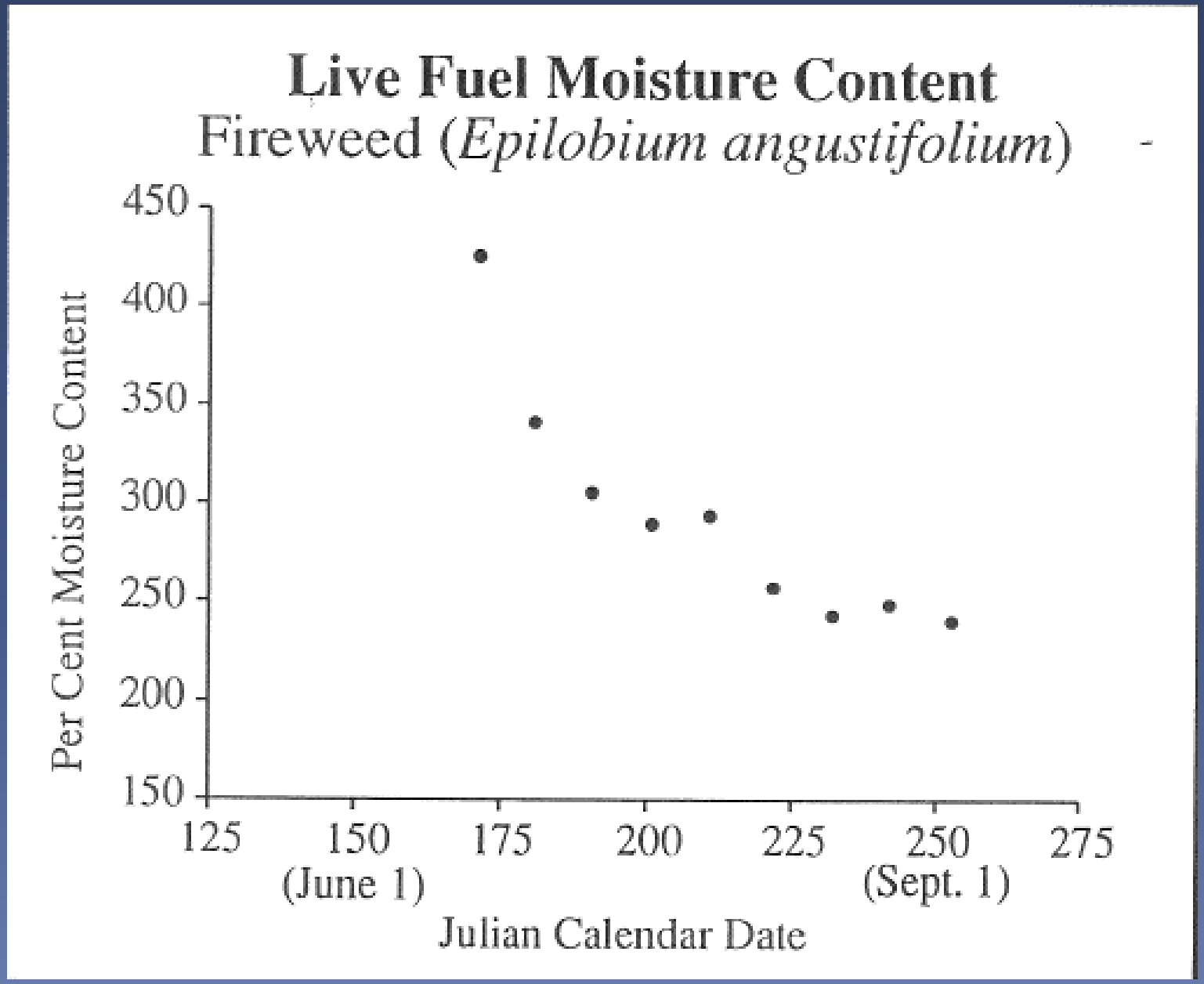


Fuel Model GR4

Blue Joint - Calamagrostis





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