

Measuring the effects of slash pile burning

Collaborative science to inform management



Three year project to study the environmental effects of pile burning



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We examined how pile age and burn season affect:

- the amount of biomass consumed,
- the rate of pile combustion,
- carbon dynamics,
- soil characteristics, and
- vegetation response



Why do we burn slash piles?



Scott Isaacson, National Park Service



Kari Greer



What are the potential impacts?

- **Reduce fuel loads**
- **Soil sterilization**
- **Scorching trees**
- **Fire spreading**
- **Incomplete combustion**
- **Smoke**



How can we study the effects of pile burning?



Controlled experiment

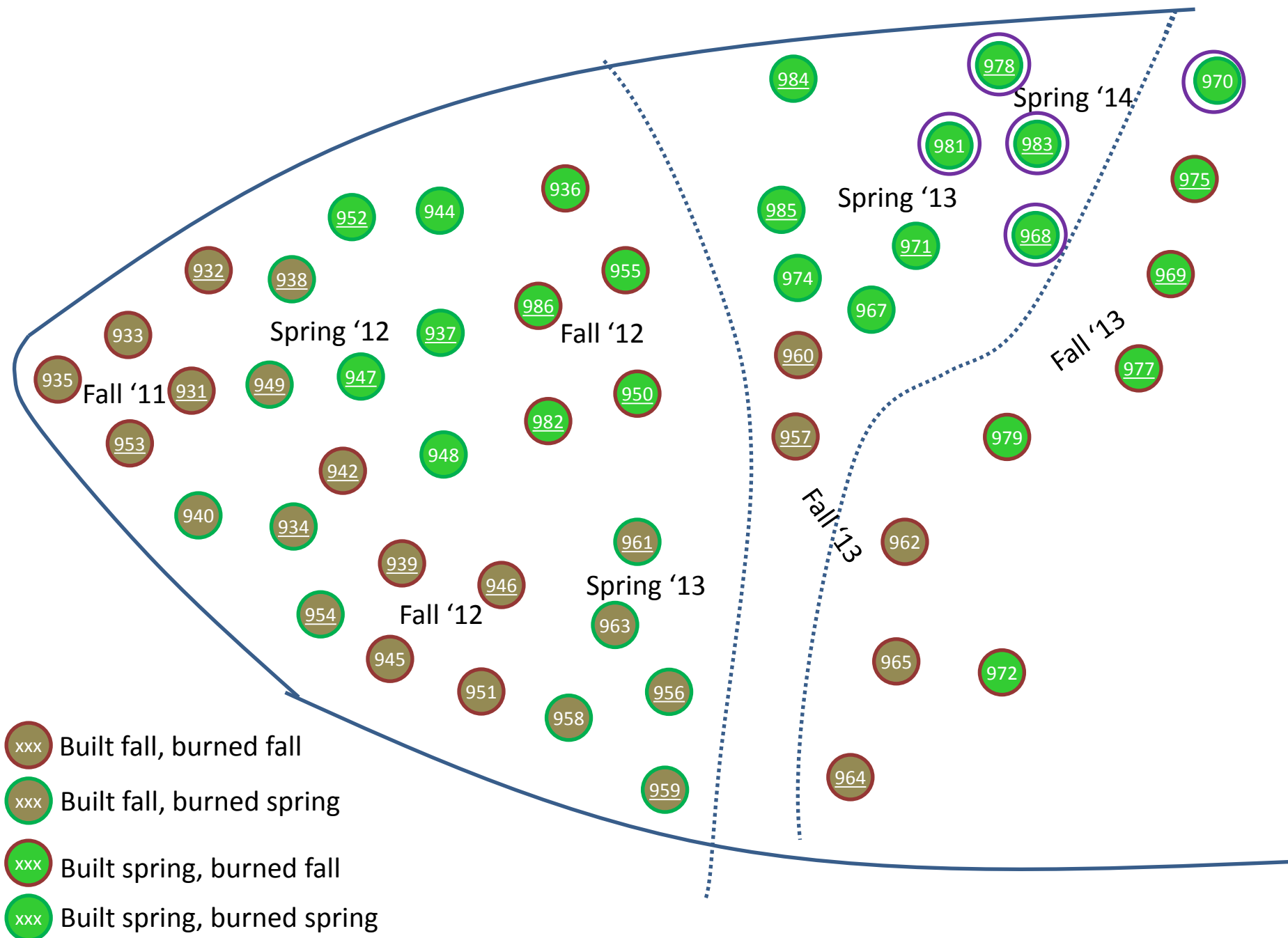
5 Ages X two seasons X 5 piles = 50 piles

		Study Year				
		2011	2012		2013	2014
Burn Season	Fall	Age 0 (n=5)	Age 0.5 (n=5)	Age 1 (n=5)	Age 1.5 (n=5)	Age 2 (n=5)
	Spring		Age 0 (n=5)	Age 0.5 (n=5)	Age 1 (n=5)	Age 1.5 (n=5)
						Age 2 (n=5)
		Built Fall 2011				
		Built Spring 2012				



4 feet high

8 feet wide



Vegetation plots



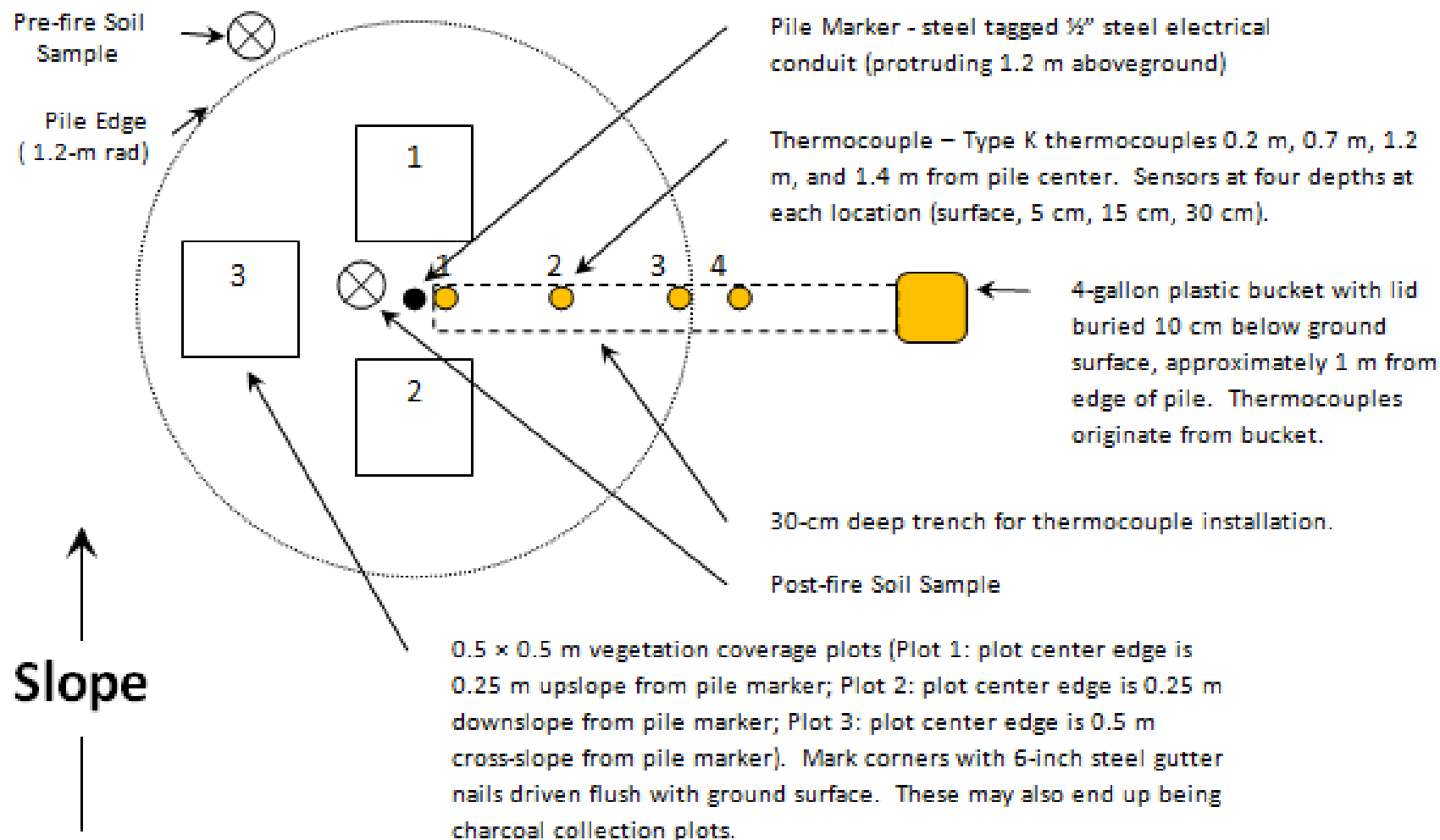


Figure 2. Pile, vegetation plot, and thermocouple layout.

Measuring soil temperature

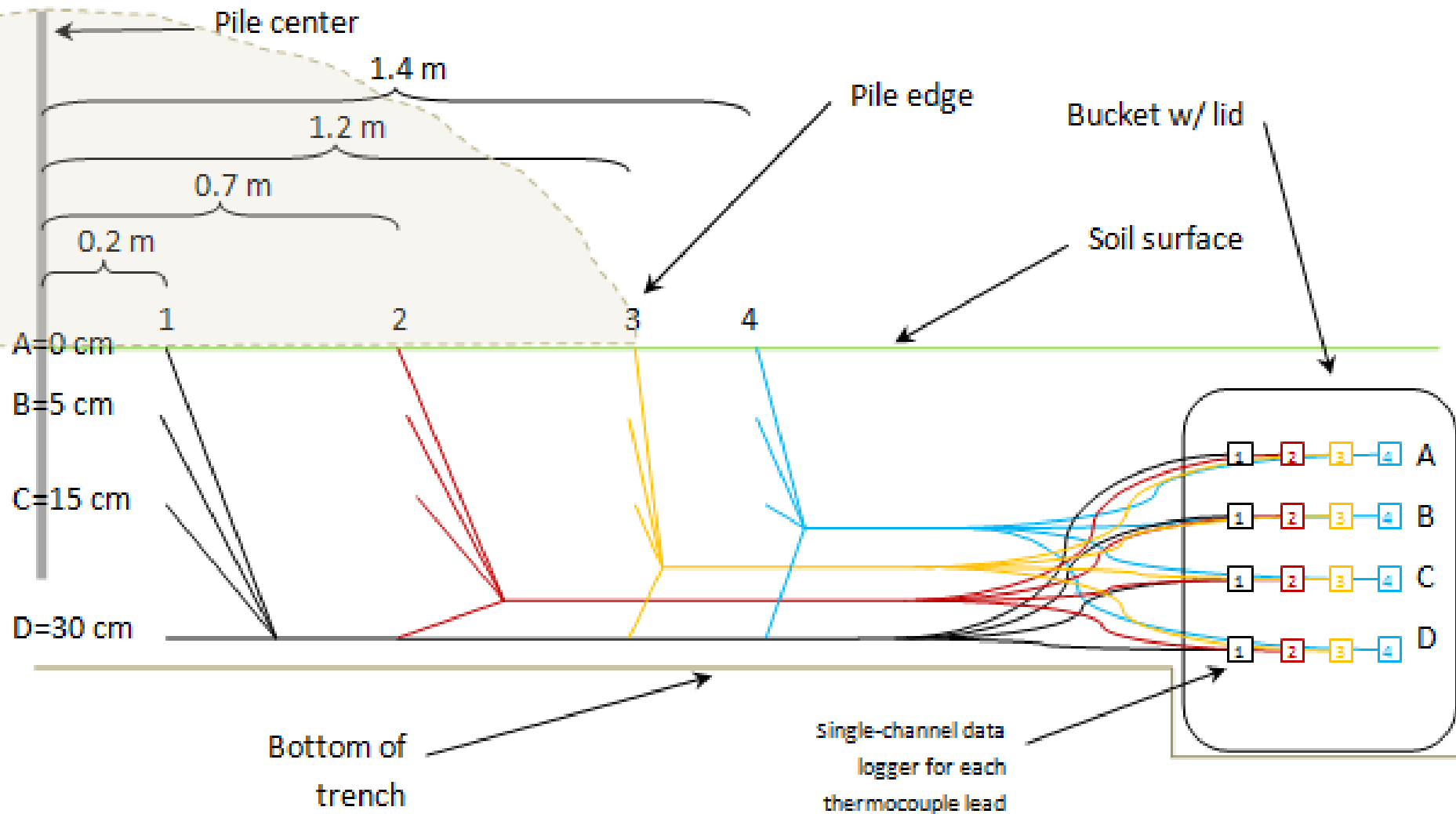


Figure 3. Thermocouple installation diagram.





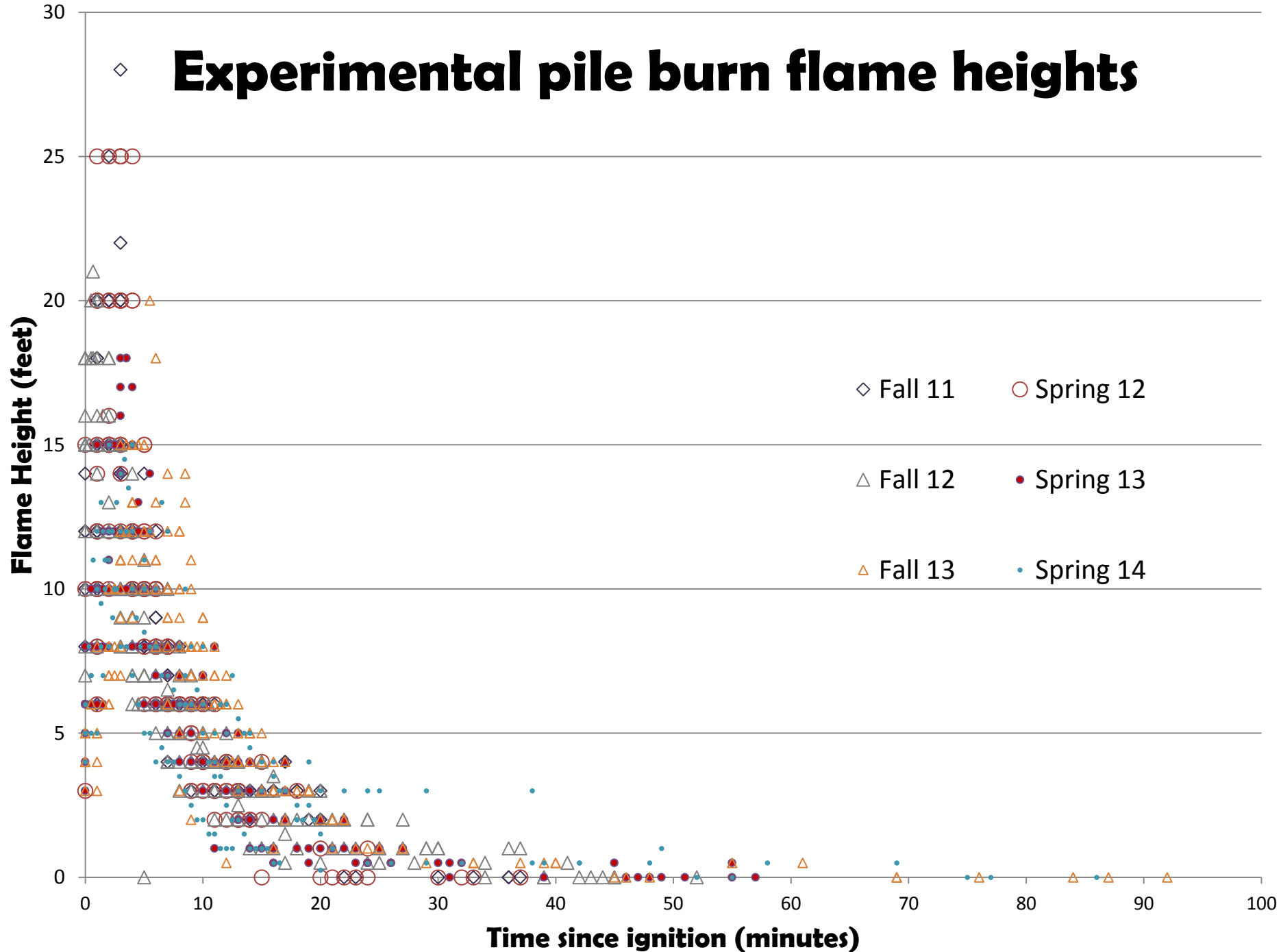




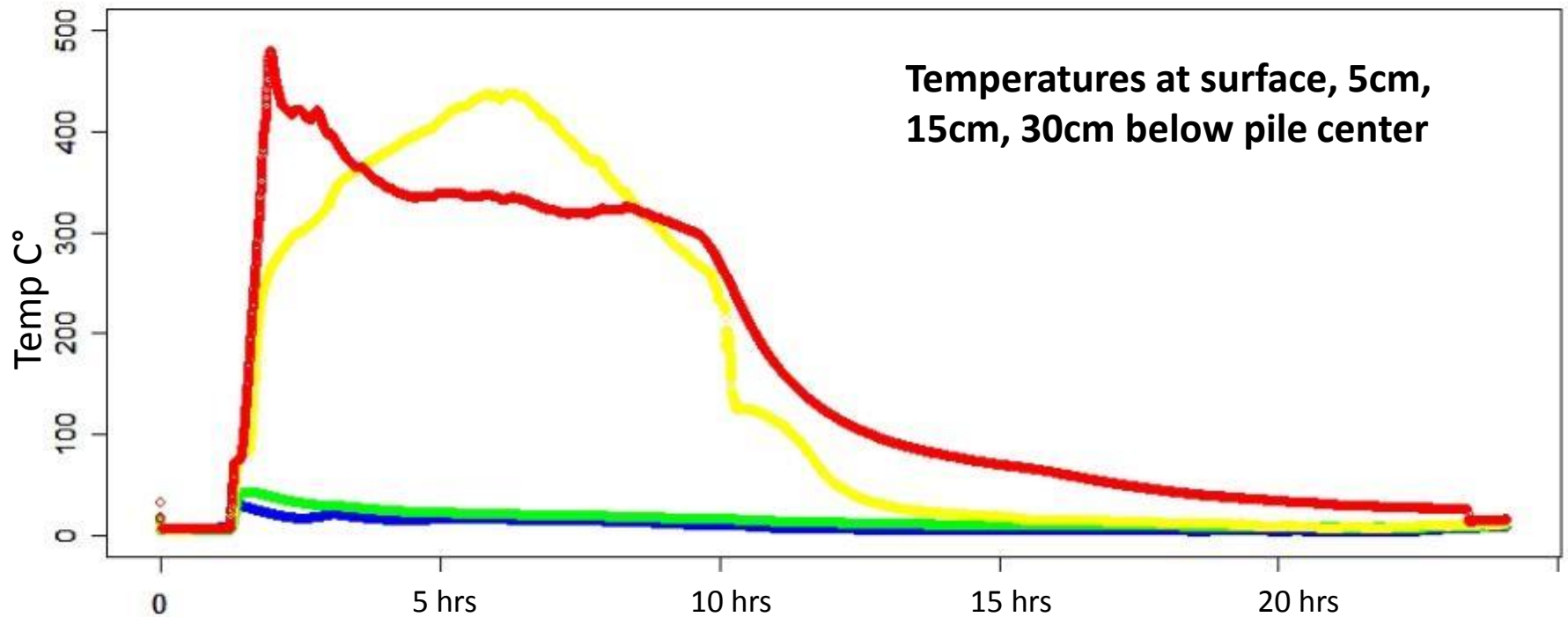
What did we learn?



Experimental pile burn flame heights



Measuring the effects of slash pile burning



Initial data show that temperatures were over 700°F right under the pile, but at the edges temperatures were only in the 80s.

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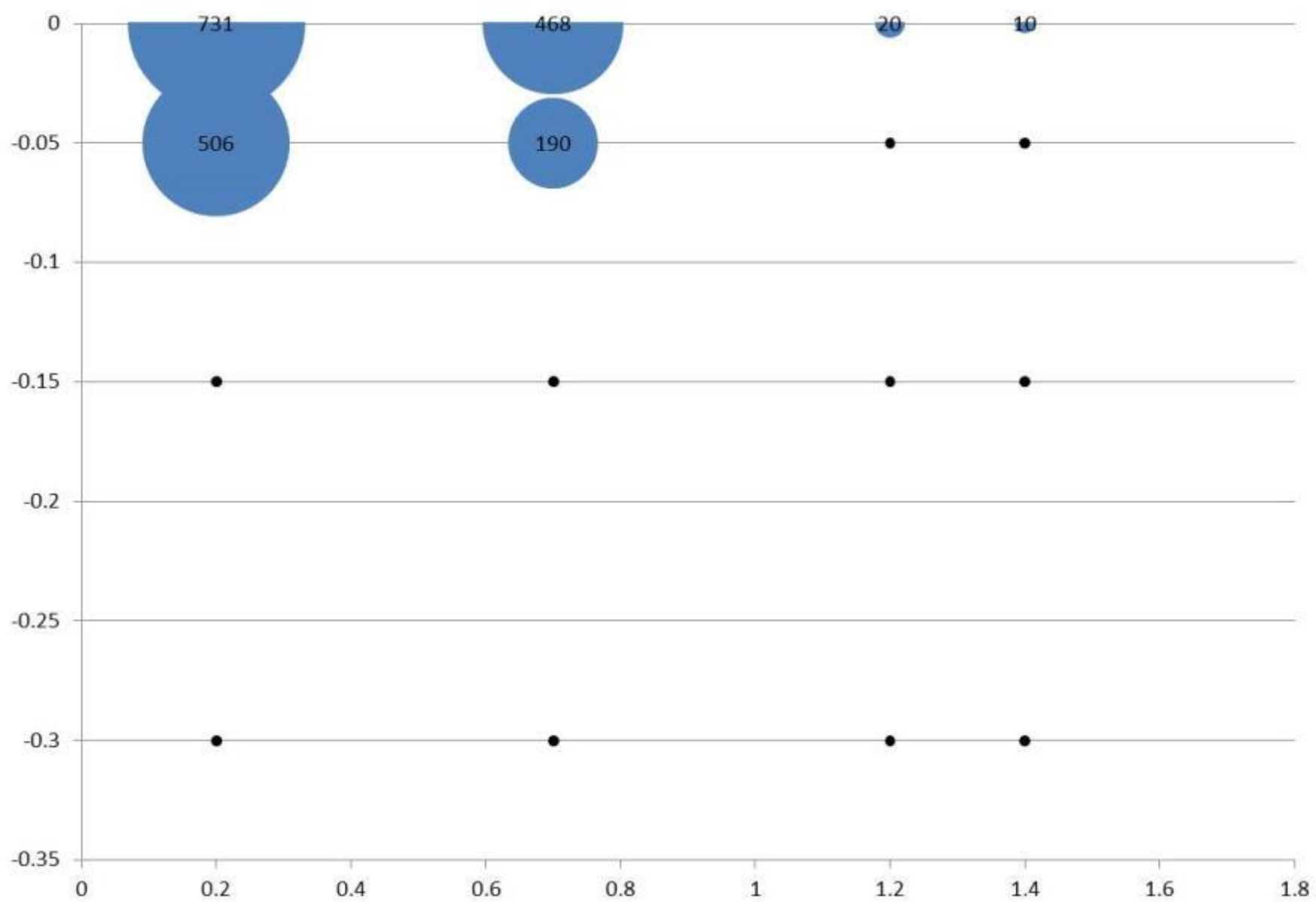
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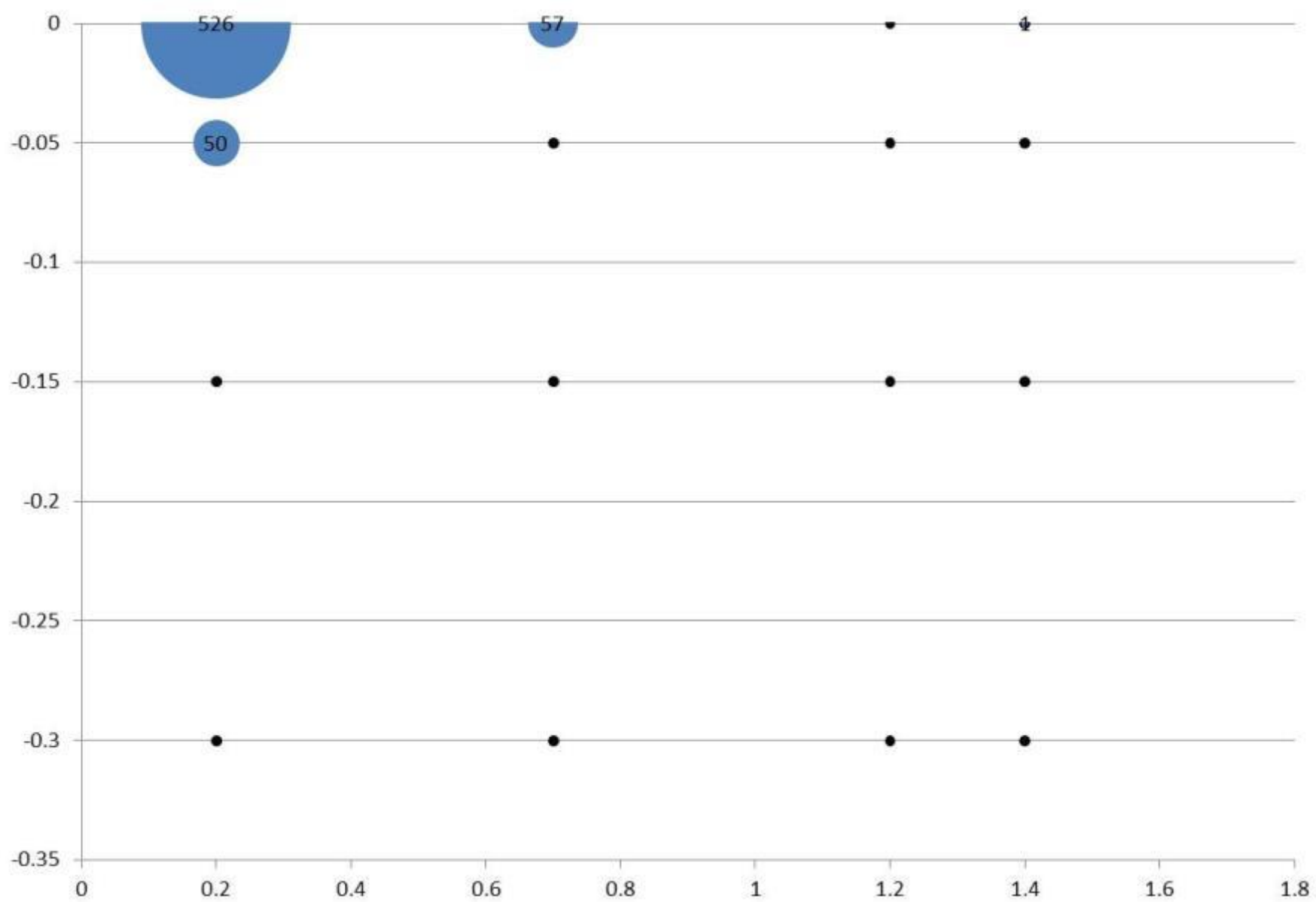
Slash Pile



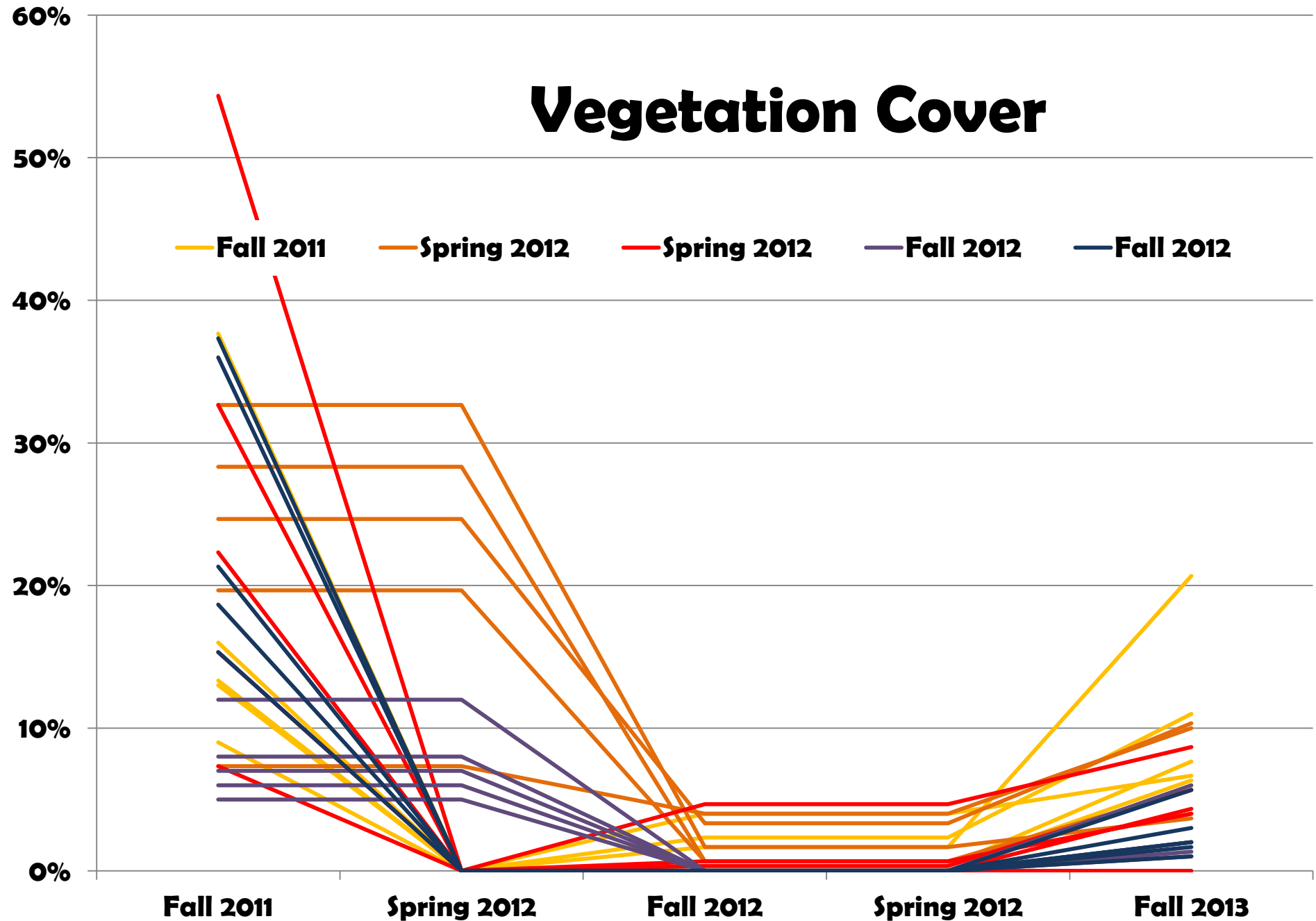
Pile Center

4 feet from center



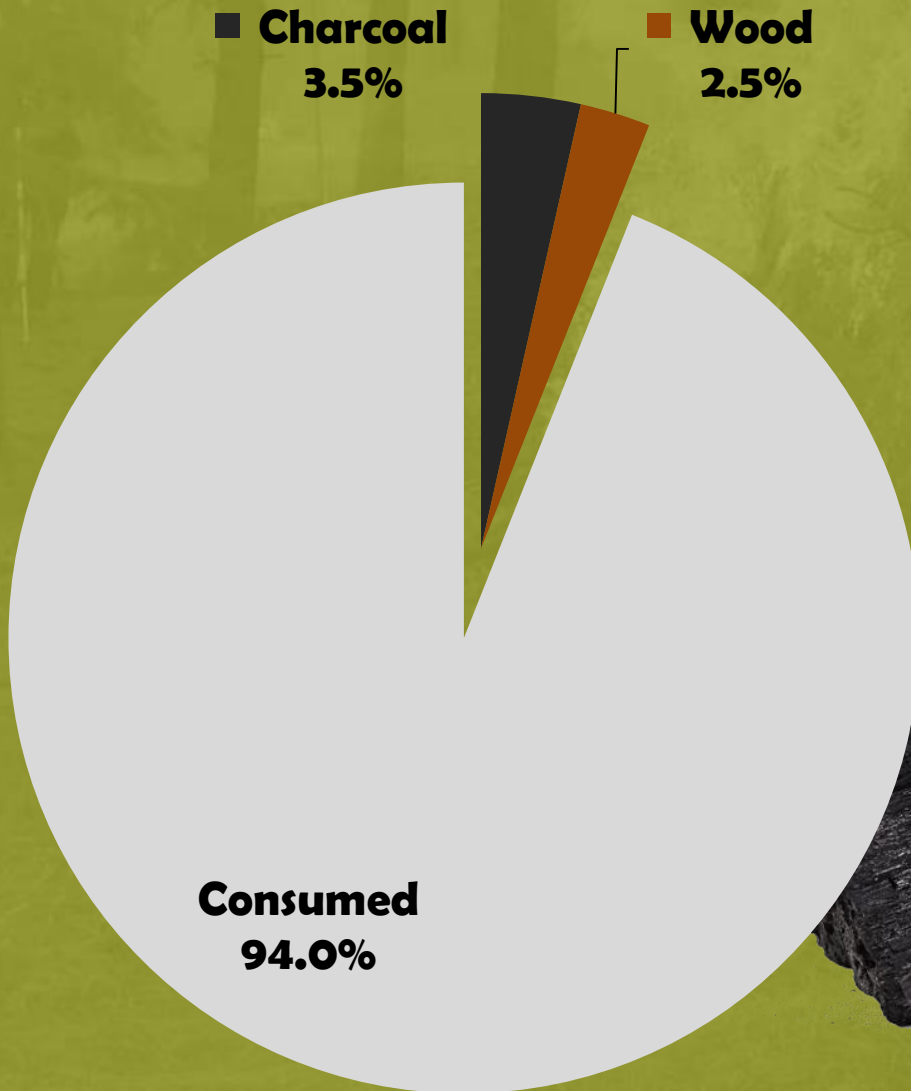


Vegetation Cover





Consumption



**Experimental
piles generate
about 8 lbs of
charcoal**



Still to do!

- **Soils!**
- **More vegetation sampling**
- **Finish charcoal**
- **Analyze data with fuel moisture data**





The Forest Guild's Mission: To promote ecologically, economically, and socially responsible forestry as a means of sustaining the integrity of forest ecosystems and the human communities dependent upon them.