

## Burning Outside the Box



John Weir  
Natural Resource Ecology and Management



### How come we don't get things burned?

- Limit burning to one season of the year
- Not enough burn days
- Weather conditions
- Burns that do get done this year get pushed to next year
- Increased burn load
- Changes in management



## Burn Considerations

How does weather impact the number of burn days?

14 years of hourly Mesonet data

**Burn Time:** 8:00am to 6:00pm

**Conditions:**

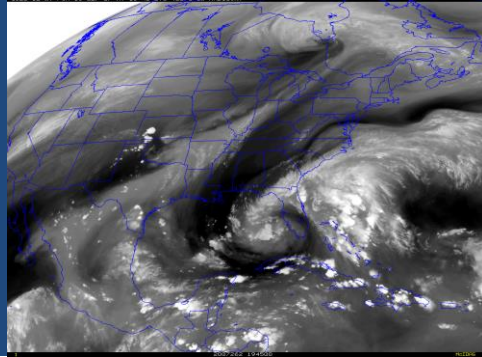
Temperature 35-110°F

Relative Humidity 20-80%

Wind Speed 4-15mph

No precipitation during time

Most be a minimum of 3 consecutive hours to be considered a burn day

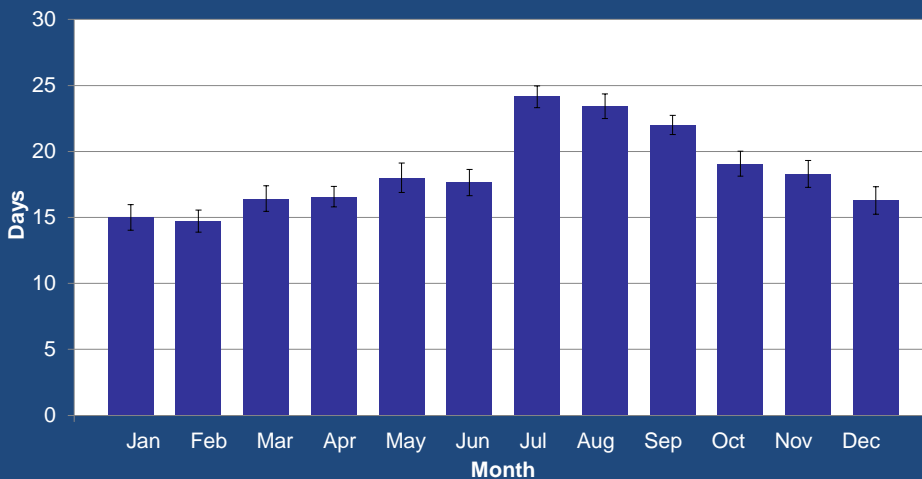


## Burn Considerations

Avg. Burn Days per Year= 222 (61%)

Avg. Burn Days per Month=19

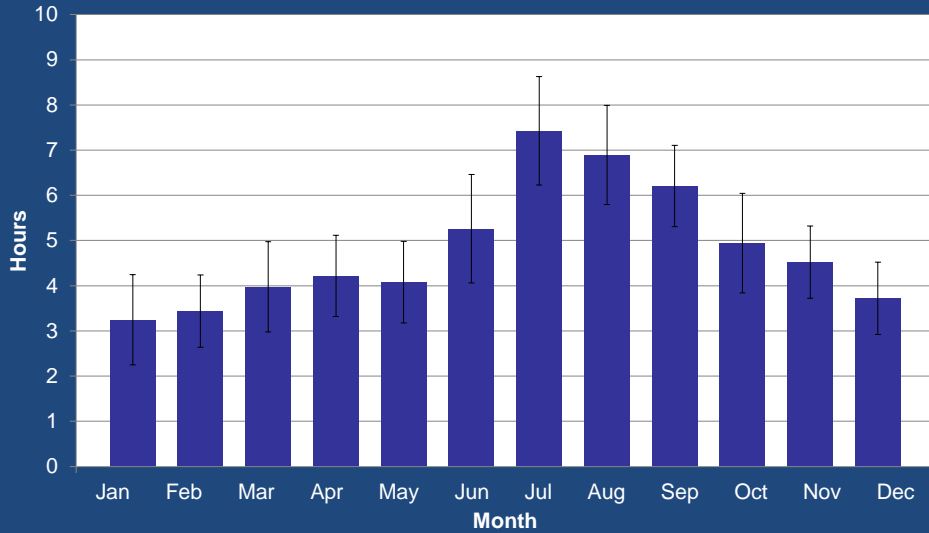
Burn Days by Month



## Burn Considerations

Burn Hours per Day (10 hr) = 4.8 hrs

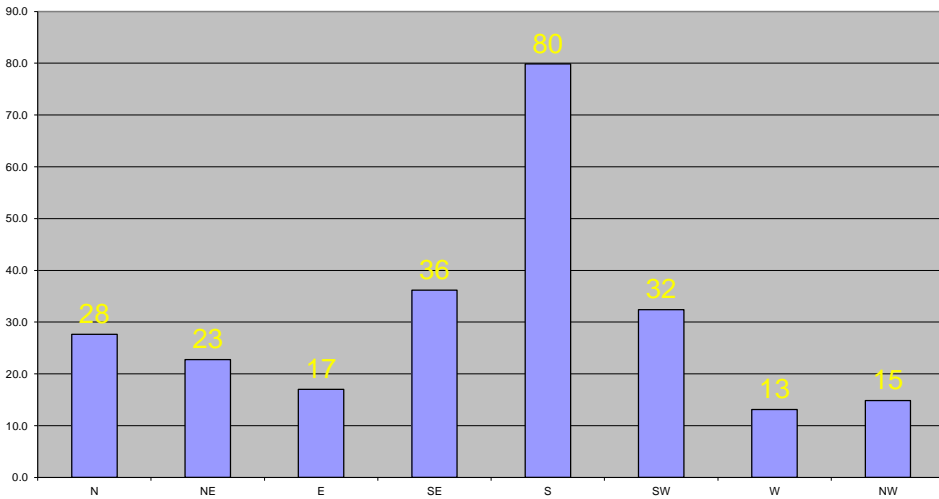
Burn Hours per Month



## Burn Considerations

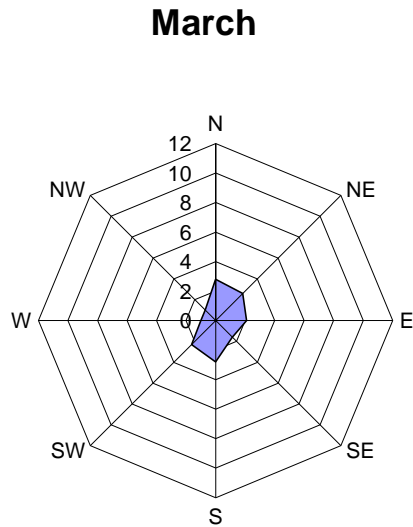
Burn days by wind direction

Total Burn Days/Year by Direction



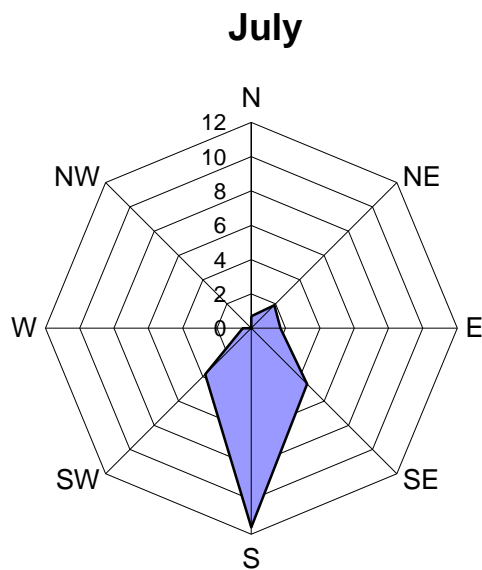
## Burn Considerations

Burn days by wind direction



## Burn Considerations

Burn days by wind direction



## Burn Considerations

Typical Burn Season-February, March, April

Hours per Month Avg.= 3.9

Rest of the Year Avg.= 5.2

Days per Month Avg.= 15.9

Rest of the Year Avg.= 19.3

Avg. Days by Wind Direction

	N	NE	E	SE	S	SW	W	NW
F,M,A	2.8	1.9	1.3	1.9	3.4	2.2	1.1	1.3
Rest of Yr	1.9	1.7	1.3	3.1	7.0	2.6	1.0	1.1

## Burn Considerations

- Oklahoma 44,738,100 acres
- 22,576,300 acres of rangeland, forests, CRP, & Federal lands
- 50% of the state is burnable



## Burn Considerations

- 4 year burn frequency or 5.6 million acres/ year need to burn
- 1.5 - 2 million acres are burned each year
- Many of the same acres annually



## Burn Considerations

- February-April only 48 days per year must burn 117,848 acres per day
- Year around 222 days must burn 25,423 acres per day

# Burn Considerations

Why burn in different seasons of the year?

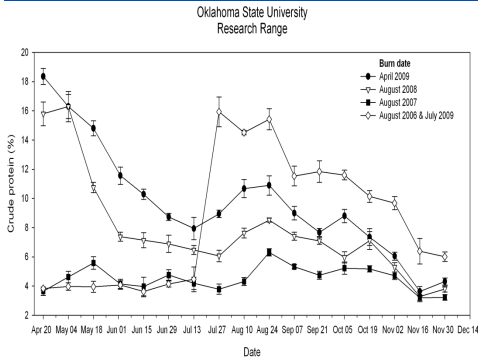
- Wildlife



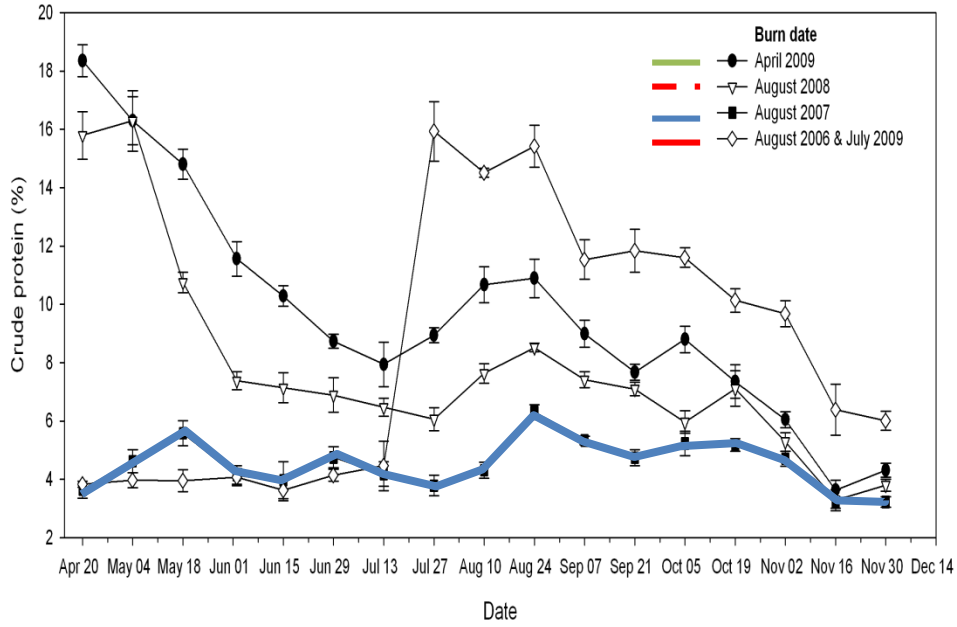
# Burn Considerations

Why burn in different seasons of the year?

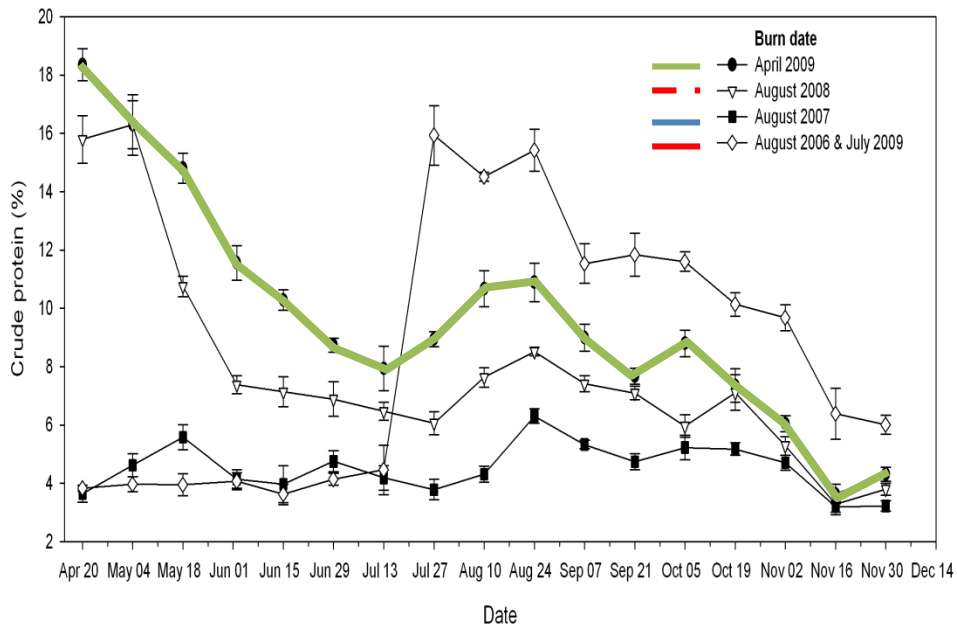
- Livestock



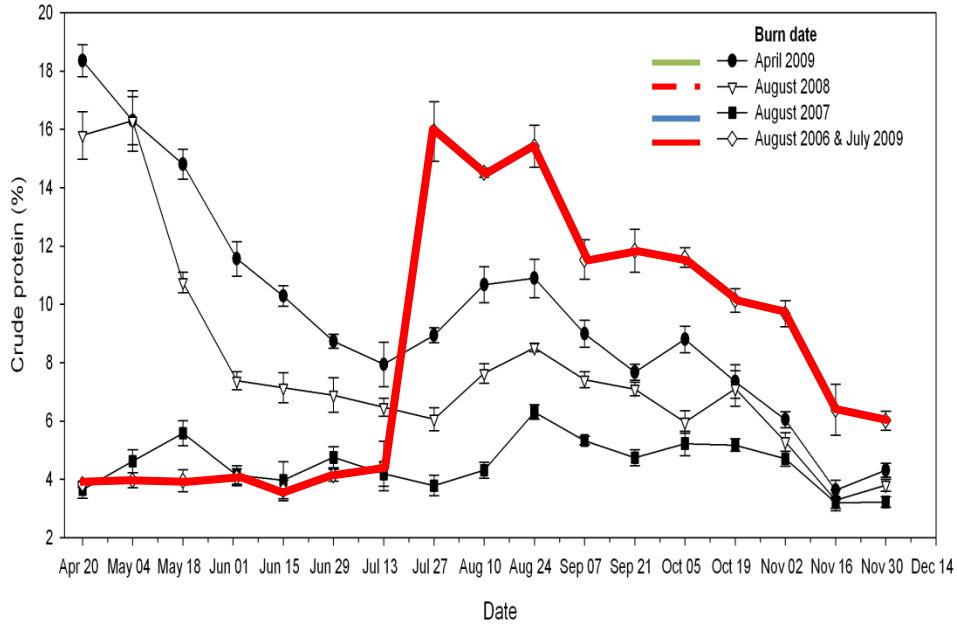
Oklahoma State University  
Research Range



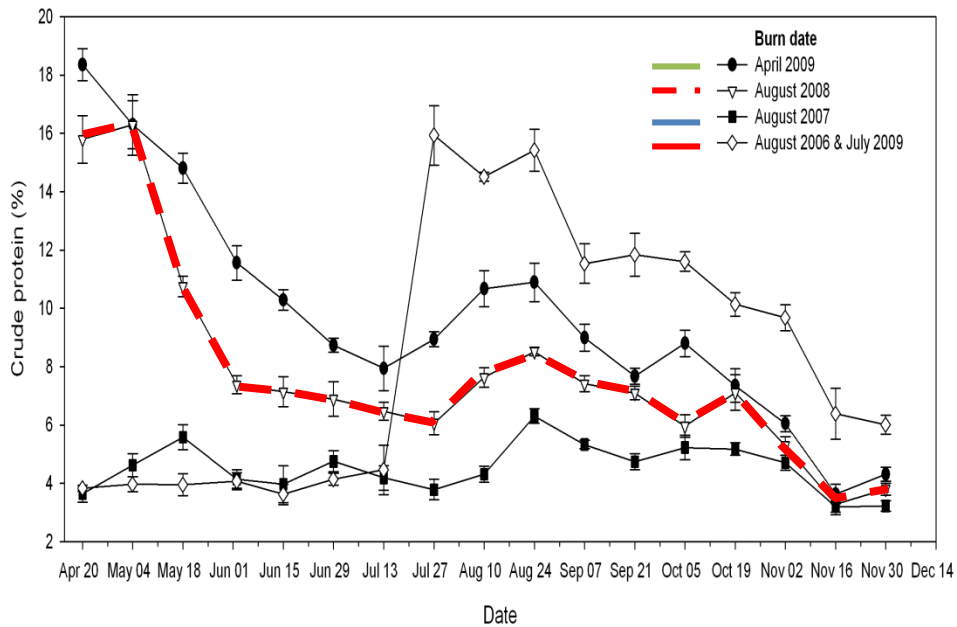
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## Burn Considerations

Why burn in different seasons of the year?

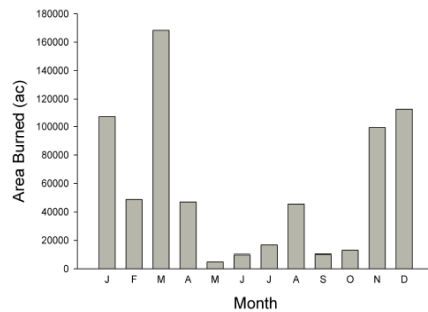
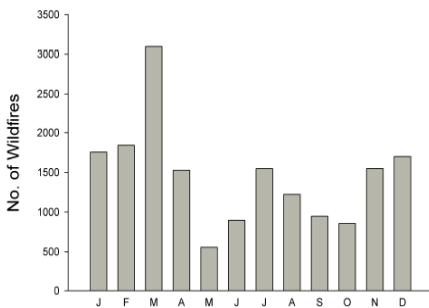
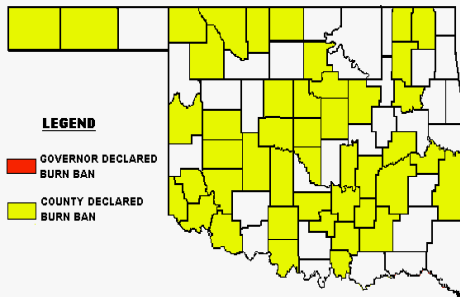
- More days
- More hours
- Consistent weather
- Fewer wind shifts/fronts

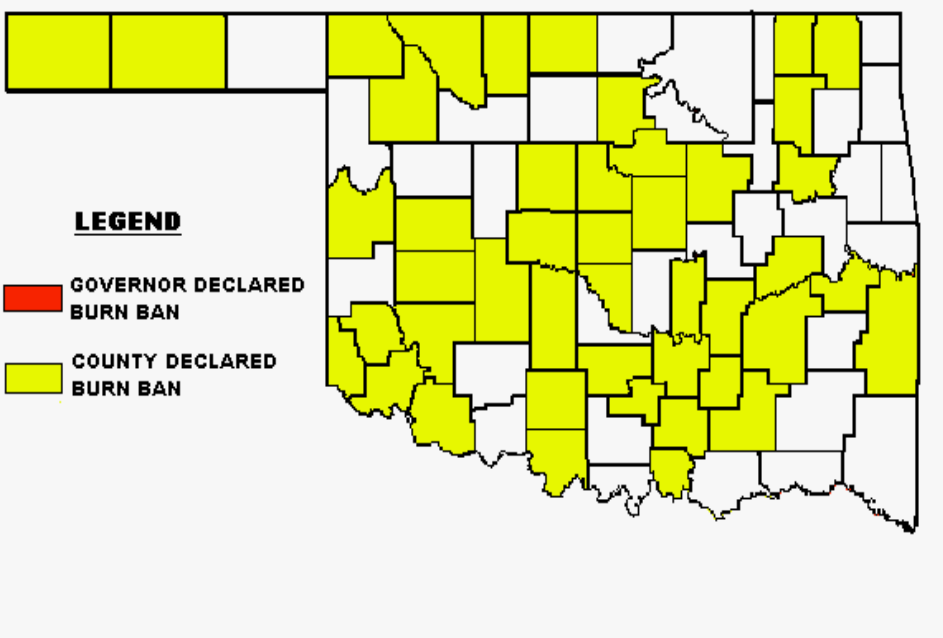


## Burn Considerations

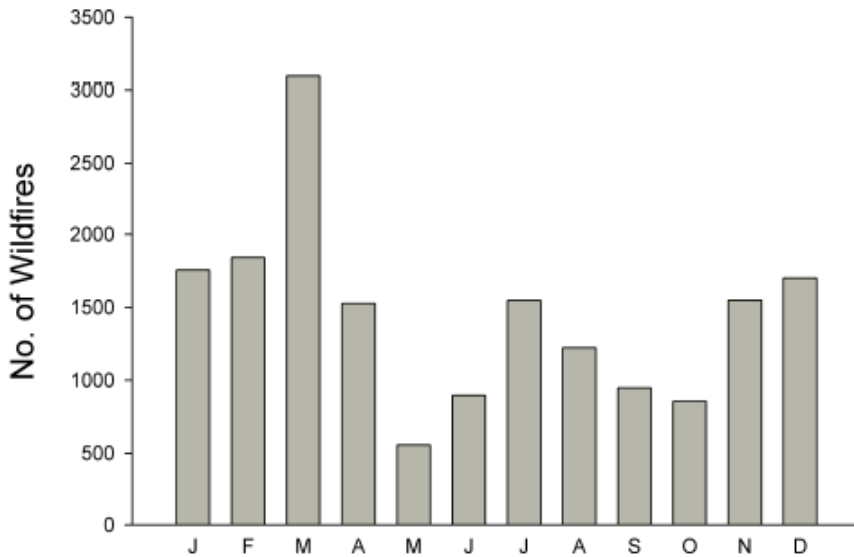
Why burn in different seasons of the year?

- Burn bans
- Wildfire season
- Is one season safer than another?

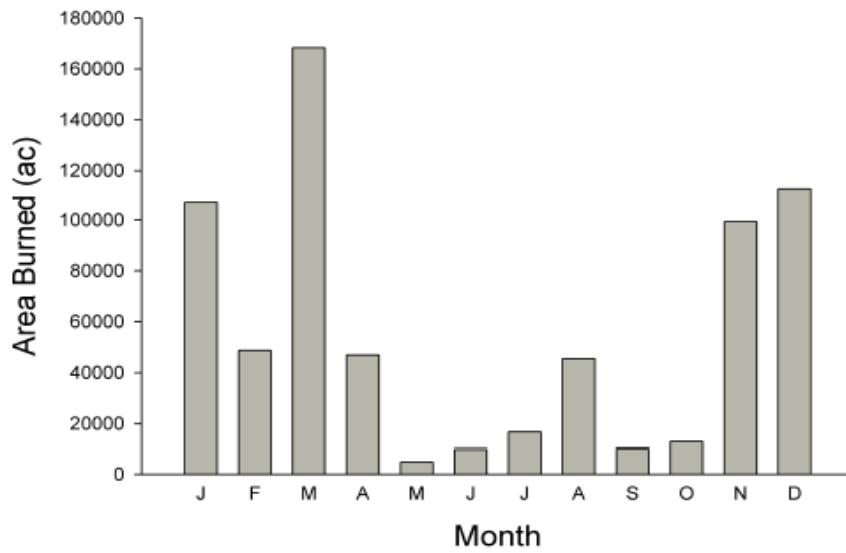




# Burn Bans



# Wildfire



## Wildfire

### Burn Considerations

Why burn in different seasons of the year?

- **Safety**
- **Dormant season burns**
  - Tall flame lengths
  - Rapid rates of spread



## Burn Considerations

Why burn in different seasons of the year?

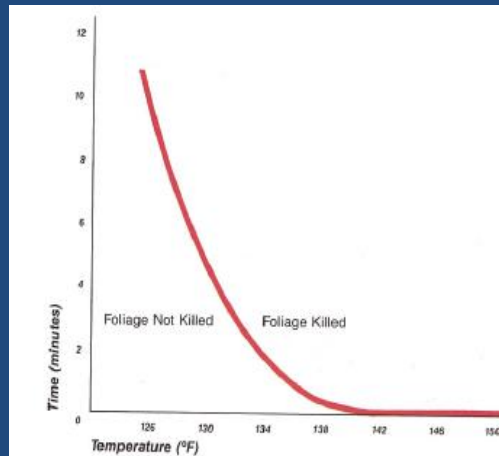
- Safety
- Growing season burns
  - Shorter flame lengths
  - Slower rates of spread
  - Lower intensity
  - Just as effective



## Burn Considerations

Why burn in different seasons of the year?

- Growing season fire benefits



Lethal time - temperature curve

## Burn Considerations

Why burn in different seasons of the year?

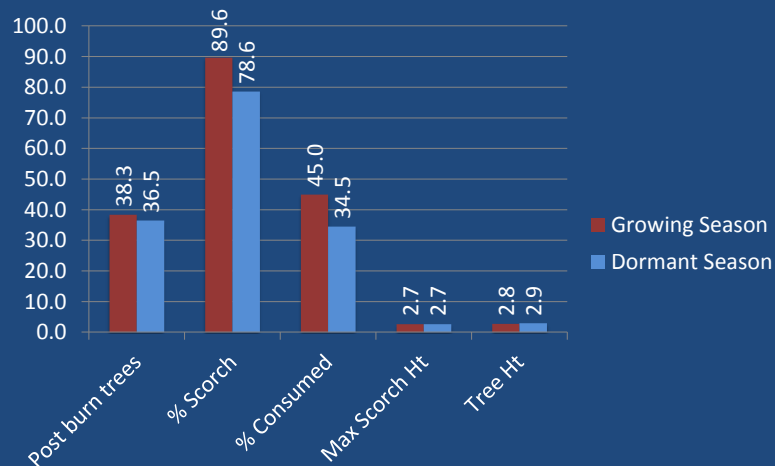
### • Cedar Mortality

	Flame Length (ft)	Max Flame Length (ft)	Flame Depth (ft)	Burn Time (sec)	Temp (F)	Wind Speed (mph)	Wind Speed Max (mph)	RH	1 hr FM	10hr FM	KBDI	Leaf Moisture (%)
Dormant Season	4.3	16.9	3.0	118	65	3	5	35	7.7	10.7	48	88
Growing Season	1.5	16.1	0.5	524	98	3	5	45	6.4	10.1	238	102

## Burn Considerations

Why burn in different seasons of the year?

### • Cedar Mortality Study



For more information and fact sheets  
[NREM.OKSTATE.EDU](http://NREM.OKSTATE.EDU)

