

**FUEL LOAD
ESTIMATION
GUIDE
FOR SOUTH CAROLINA**



FUEL LOAD ESTIMATION GUIDE

for South Carolina

To comply with *Smoke Management Guidelines for Vegetative Debris Burning Operations in the State of South Carolina*, land managers that utilize prescribed fire to accomplish resource objectives for agriculture, wildlife management, or forest management purposes are required to estimate the tons of fuel that will be consumed on each site when making notification to the SC Forestry Commission.

Estimating the total tons of fuel present on the site is often difficult for novice burners. This guide was developed to provide a visual reference for burners to aid them in the fuel load estimation process.



The photographs in this document were taken during a fuel load study conducted by the SC Forestry Commission. In the study, plots were taken in various fuel types across the state. In each plot, the vegetation and litter were collected, oven dried, and weighed to calculate the total tons per acre on each study site.

To accurately estimate fuel loading:

- Choose a fuel type from the fuel loading chart or from the photos provided that most closely matches the fuels present in the area you plan to burn. ***The fuel type used to estimate fuel loading should represent the fuel on site that will be the main carrier of the fire.***
- Using the Typical Fuel Loadings chart (available in this reference guide or in the Smoke Management Guidelines) or the reference photos in this document, decide if the site you plan to burn has



Low, Medium, or High fuel loading. Use the tons provided in the chart or photographs as a guide, estimate the **total tons** of fuel present (per acre) in the burn area.

- Estimate the percentage of the total fuel that is available to be consumed by the prescribed fire on the day of the burn. This estimate should be based on fuel moisture, fuel size, fuel arrangement, depth of the fuel bed, days since the last precipitation, and long-term drought conditions.
- Multiply the total tons of fuel X the percent of fuel available to determine how many tons of fuel available to burn on each acre.
- Multiply the tons per acre of available fuel X the number of acres in the burn unit to determine the total available tons of fuel (the fuel that will be consumed during the prescribed burn).



Sample Scenario and Calculation:

You plan to burn a 10 acre tract where the predominant fuel is pine litter. Using the *Typical Fuel Loadings* chart and the reference photographs, you determine that the site has Medium fuel loading. Because it rained in your area two days ago, you estimate that 50% of the total fuel on the site is available to burn.

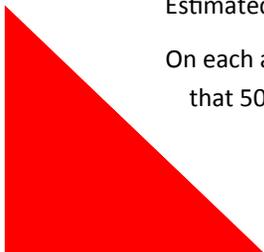
Fuel Type: Pine Litter

Acres in burn: 10

Fuel Loading: Medium (8 tons on the *Typical Fuel Loadings* chart)

Estimated percentage of fuel available: 50%

On each acre, you have 8 total tons of fuel present. You have estimated that 50% of this fuel is available to burn due to recent rains.



8 tons/acre X 50%= 4 tons/acre of fuel available

10 acres in burn X 4 tons/acre= 40 tons that you estimate will be consumed by the prescribed burn.

Typical Fuel Loadings

Fuel Type	Total Tons per Acre*		
	Low	Medium	High
Pine Litter	3	8	14
Hardwood Litter	3	5	7
Pine/Hardwood Litter	3	6	8
Wiregrass	2	3	5
Grass/Brush	2	4	8
Palmetto/Gallberry	5	10	15
Marsh Grass	4	10	15
Bay	10	15	20
Slash in Place	8	12	16
Windrows/Piles	10	15	20

*Reduce to available tons as fuel conditions warrant

LOADINGS



Pine Litter
Low fuel loading
Longleaf Pine
Sawtimber
3.1 tons/Acre





Pine Litter
Low Fuel Loading
Longleaf Pine
3.8 tons/acre



Pine Litter
Medium Fuel Loading
Planted
Loblolly Pine
7.5 tons/acre



Pine Litter
Medium Fuel Loading
Natural
Loblolly Pine
8.1 tons/acre



Pine Litter
Medium fuel loading
Longleaf Pine
Sawtimber
10.7 tons/Acre





Pine Litter
Medium Fuel Loading
Loblolly Pine
Plantation
Pulpwood
11.5 tons/acre



Pine Litter
High Fuel Loading
Longleaf Pine
Sawtimber
13.6 tons/acre



Pine Litter
High fuel loading
Longleaf Pine
Sawtimber
13.8 tons/acre



Pine Litter
High Fuel Loading
Natural
Loblolly Pine
15.2 tons/acre



**Pine/Hardwood
Litter**
Medium Fuel Loading
Slash Pine
5.5 tons/acre



**Pine/Hardwood
Litter**
Medium Fuel Loading
Natural
Loblolly Pine
5.8 tons/acre



**Pine/Hardwood
Litter**
Medium Fuel Loading
Loblolly Pine
Sawtimber
6.0 tons/acre



**Pine/Hardwood
Litter**
Medium Fuel
Loading
Planted
Loblolly Pine
7.2 tons/acre





Wiregrass
Low Fuel Loading
2 tons/acre



Marsh Grass
Low Fuel Loading
Coastal Needle
Rush
5.4 tons/acre



Marsh Grass
High Fuel Loading
Tall Cord Grass
16.4 tons/acre



Slash in Place
Medium Fuel Loading
12 tons/acre





Storm Damage
High Fuel Loading
20+ tons/acre



Agriculture Field
Low Fuel Loading
Wheat/Straw
1.5 tons/acre



Agriculture Field
Medium Fuel Loading
Wheat/Straw
1.9 tons/acre



Agriculture Field
High fuel Loading
Coastal Wheat
2.9 tons/acre



To make a notification to the Forestry Commission for a prescribed burn, contact SCFC Dispatch at **1-800-777-FIRE (3473)** on the day of the burn.

The entire text of *Smoke Management Guidelines for Vegetative Debris Burning Operations in the State of South Carolina*, fire weather planning forecasts, and other information useful for the responsible prescribed burner are available online at:

www.trees.sc.gov



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