

MULCH INTENSITY AND FIRE BEHAVIOUR: PELICAN MOUNTAIN

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Challenges

What are the problems faced by wildfire agencies, communities and industry?

Actions

Results

Impacts



COST AND EFFECTIVENESS OF FUEL MANAGEMENT TREATMENTS



- Industry mulching practices have evolved to become a fuel management strategy in and around communities and critical infrastructure.
- Costly (>\$10,000 per hectare)
- Fire behaviour in boreal mulch is not well documented
- Cost benefit of different mulching intensities is not well known

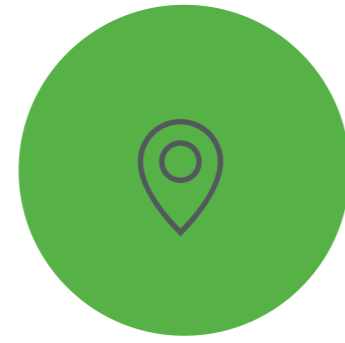
Challenges

Actions

What is FPInnovations doing to address the challenges?

Results

Impacts



- Mulch intensity productivity and fire behaviour trials conducted at Pelican Mountain in 2018
- Collaboration with AAF



- Evaluated the productivity and fuel characteristics of three different mulch intensities:
 - Normal intensity treatment → regular mulch fuel layer
 - Low intensity treatment → coarse mulch fuel layer
 - High intensity treatment → fine mulch fuel layer



Normal intensity



Low intensity



High intensity

- Document fire behaviour in each of these intensities

PRODUCTIVITY RESULTS

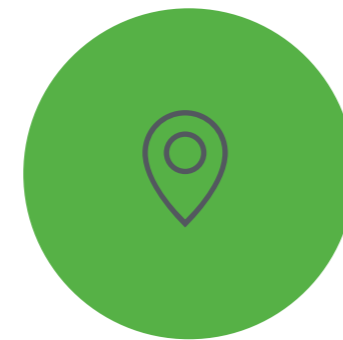
Challenges

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Results

What are the results, to date, from this research?

Impacts



- Pre- and post-treatment fuel inventories conducted by the Alberta Wildland Fuel Inventory Program crews
- Machine productivity was evaluated over a “productive machine hour”
- Careful analysis is required

Subunit (mulching Intensity)	Biomass per subunit (OD kg)	Area (ha)	Time (PMH)	Productivity	
				(kg/PMH)	(ha/PMH)
2A (low)	21366	0.32	1.72	12422	0.19
2B (normal)	35988	0.35	6.15	5852	0.06
2C (high)	51324	0.58	9.80	5237	0.06

FIRE BEHAVIOUR RESULTS

FFMC	BUI	ISI	FWI
90	65	6.7	19

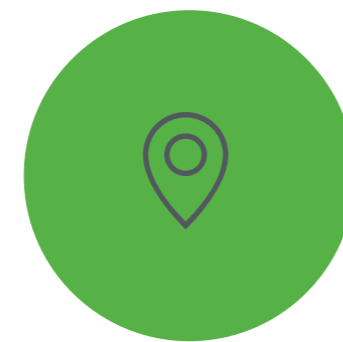
Challenges

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Results

What are the results, to date, from this research?

Impacts



- Most vigorous fire behaviour observed in the low intensity treatment (coarse mulch)
 - Undisturbed surface layer (mosses and lichens) and needles on branches contributed to the fire behavior
- ROS through the low intensity treatment was 4 times greater than through the high intensity treatment



Normal mulch intensity



Low mulch intensity



High mulch intensity

● Challenges

● Actions

● Results

● Impacts

What are the impacts of this research?

IMPACTS OF MULCH PRODUCTIVITY AND FIRE BEHAVIOUR RESEARCH



- Knowledge of the difficulty of control in this surface fuel type
- Crew exposure to fire behaviour in this fuel type
- Ability to determine a cost benefit analysis
- Target the right intensity to be cost effective
- Results can inform a decision support tool



Photo by Dave Schroeder